UNIVERSITY OF PENNSYLVANIA

FINANCIAL POLICIES IN THE AVIATION INDUSTRY

PAUL A. DODD

A THESIS

IN ECONOMICS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

PHILADELPHIA
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PAUL A. DODD

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Paul A. Dodd

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CHAPTER I

Introduction

1. *Development of the Aviation Industry*

That the productive activities of individual enterprises are motivated by opportunity for pecuniary gain is a generally accepted principle in American industry. Making due allowance for the chance for gain in matters of risk-taking, it is equally true that if an enterprise is to withstand the pressure of present day competition and so to continue as a productive agent in American industry, it must be able to show, over a period of years, profits sufficiently large to attract investors. Future capital requirements will not continue to flow indefinitely into enterprises that, because of insufficient earnings, have been able to offer neither actual nor prospective returns upon the investment.

This same theory can be applied to an entire industry, for each industry is only a composite of all individual enterprises within that field. Furthermore, this earning capacity of individual enterprises, and hence of entire industries, both determines and is determined by the underlying financial structure. If an industry grows successfully and becomes remunerative to investors, it is not wholly because this industry has delivered goods or services which have been highly valued by the public. This factor is a prerequisite to successful activities, but its counterpart consists of both a properly balanced financial structure, and policies modified to meet ever changing external conditions and the internal needs of each unit within the industry. To the casual observer, the success with which these changing circumstances have been met is measured by the rapidity and degree of physical development. To the student of finance, however, this success is measured by the strength of the financial structure, the wisdom with which policies have been initiated, the possibilities of an expanding market, and the actual and potential productivity of the industry. It is in the light of the latter viewpoint that an analysis of a new field in American industry has been undertaken.

Growth of the Aviation Industry.—Every industry that withstands the growing pains of infancy, and the financial and competitive storms of adolescence to enter into the more stabilized era of maturity has passed through several phases throughout its life history. During the early days of its organization there normally has been endured a period of experimentation. Then follows a period of rapid expansion, characterized by a large flow of capital funds directed into new plants and equipment to supply a developing market. This expansion period is usually followed by a diminishing rate of activities when the flow of capital and new developments become contingent upon prospective needs and earnings. The final phase of an industry's life cycle is characterized by an indefinite period of stability when only the oscillations of the business cycle influence it, and where it continues until finally its usefulness is displaced by a new and modern competitor.[1]

The aviation industry affords a timely illustration of this curve of progress. When judged by the number of companies within the field, it becomes quite clear that the second phase of this development is well under way. While the aeroplane was flown successfully first in 1903, within only a few years of the birth of the automotive industry, the impetus given aviation during the war period had created only a dozen producers.[2] It was not until the decade ending with 1930, however, that a remarkable expansion took place within this new industry which witnessed near the close of the period the entrance of over four hundred companies engaged in aviation activities.[3]

A second method of determining the importance of this new industry and the phase of the life cycle through which it is now passing is that of examining the growth of capital invested within its field. Here again, a remarkable development is to be found.

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[1] For exposition of this concept see Pierre R. Brety's *Looking Ahead with Common Stocks* (Wetzel Market Bureau). This same concept has been reproduced in the *Semi-Monthly Review* (Paine, Webber & Co.) for March 10, 1931.

[2] For the financial and physical extent of the impetus caused by the war demand, see note 13, p. 9.

[3] *Aeronautics Trade Directory*, issued by the U. S. Dept. of Commerce, Aeronautics Branch (July, 1931) lists 459 companies in the branches of the industry covered by this study. The directory dated July 1, 1930 lists 402 companies in these branches.

In 1921 the total capital invested in aviation was approximately ten million dollars.[4] By 1924 the repercussions brought about by post-war readjustments actually caused a shrinkage in these investments. From this time (1924) on throughout the remaining six years of the last decade, however, financial investments within the industry have grown phenomenally, reaching one-eighth billion dollars by 1928, and passing one-fourth billion dollars (or more than doubling) by the end of the following year, 1929. While total capital investments experienced a 15 per cent fall between the latter year (1929) and the close of the decade in 1930, this volume is nevertheless impressive, and challenges further inquiry in seeking out the more important causes and effects of this rapid expansion.

The marked expansion of physical enterprises was made possible only through a constant flow of investment funds. These funds, in turn, were acquired largely through new security issuances. External circumstances, however, have played their influence upon these new capital acquisitions, and the Aviation industry has both gained and lost because of the general credit conditions recently experienced throughout the nation. Its major gain has been in the ease with which these funds have been secured, and its principal loss has been in the result of this easy flow of funds to the industry, together with the dampening influence of curtailed markets augmented by business liquidation and stagnation. Further discussion should throw light upon physical growth and the extent of these capital flows.

Security issues in the Aviation Industry.—The growing importance of aviation in the fields of finance and industry is emphasized by the remarkable increases in new capital flotations experienced within the past three years. While practically no new securities were publicly issued from 1921 up to March,

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[4] For exact figures covering companies included within the present study, see Appendix O, p. 190.

[5] This statement is qualified because several of the older companies had been publicly financed prior to this time. But the total amount publicly offered before 1928 could not have been more than $14,670,978 which was the total capital stock and capital surplus outstanding at December 31, 1927 for all companies under study representing, as later demonstrated, practically the entire industry.

1928,[5] the spring of the latter year witnessed the beginning of a phenomenal growth of new aviation securities. In the course of a single year these new capital flotations developed from a cumulative total of $500,000 to one of $174,601,710, and by the end of another twelve-month period this total had been further increased to $255,171,143.[6]

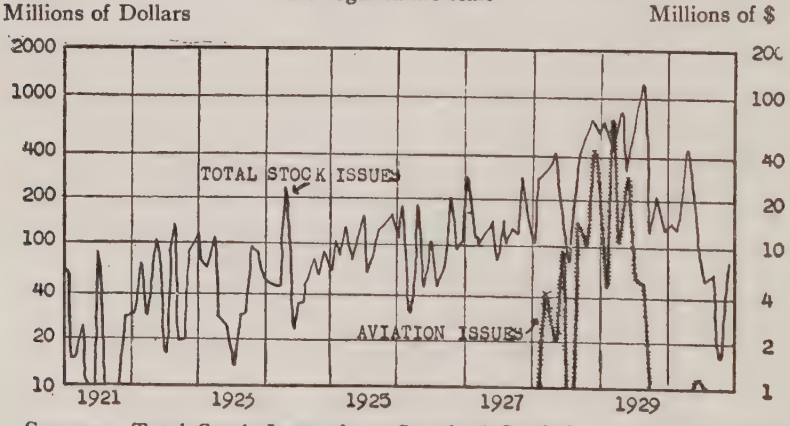
When such an increase is compared with the increase in the total new corporate securities issued for all industries in the United States, the phenomenal development of new aviation issues becomes even more pronounced. It was not until June of 1928 that the total New Corporate Security Stock issues for all industries in the United States passed the $400 million mark, while in December of this same year total new issues reached almost $700 million.[7] According to compilations on new financing for the first eight months of 1929, the aviation industry was fourth on the list with a total of $158.7 million of new securities

CHART No. 1

NEW CORPORATE SECURITIES

Total Issues Compared with Aviation Issues by Months

Semi-logarithmic scale



Sources; Total Stock Issues from Standard Statistics; Aviation Issues compiled from *Fin. & Com. Chronicle.*

[6] Figures are cumulative totals for March 31, 1928, March 31, 1929 and March 31, 1930, respectively. For 1928–1930 cumulative table of capital flotations by months, see Appendix M, p. 187.

[7] $409.6 million and $694.1 million respectively. (See Chart No. 1 above.)

out of a total of $4.2 billion issued by American industry during this eight-month period.[8]

These facts clearly indicate that this industry received, during the months of most active speculation, far more than its proportional share of new capital. In the month of March, 1928, new aviation securities were approximately .2 per cent of the total new corporate stock issues; in October, 2.8 per cent; and in March, 1929, 11.2 per cent. As the trend of the lines of Chart No. 1 indicate, the growth in percentage of aviation securities absorbed by the public has not been constant, but rather highly fluctuating. Starting from zero in the spring of 1928, this activity reached the peak in March, 1929, and then diminished until the entire year of 1930 found only $1,855,184 of aviation financing, against a total of $164,952,374 for the calendar year preceding.

Movement of the Market Price of Aviation Stock.—These unusual increases and decreases in the volume of security issues within the industry are highly significant. The early life of an industry usually witnesses rapid advances and declines in its financial strength and earning power, for these conditions are highly dependent upon the phase of the industry's life cycle. Until the middle of the last decade the aviation industry had been passing through a long period of experimentation, but several factors conspired to bring this period to an end, and to aid in ushering in a period of rapid expansion. Charles Lindbergh's successful non-stop flight from New York to Paris in May, 1927, preceded by other important flights had attracted considerable public attention and had aroused public interest to a point sufficiently intense to produce speculative activities.

With a combination of this favorable psychology on the part of the public, and a steadily increasing speculative movement in the capital markets, aviation stocks, taken as a group, moved from an index number of 96.4 during the first week in January, 1926 to 1260 during the second week in May, 1929—a net spread

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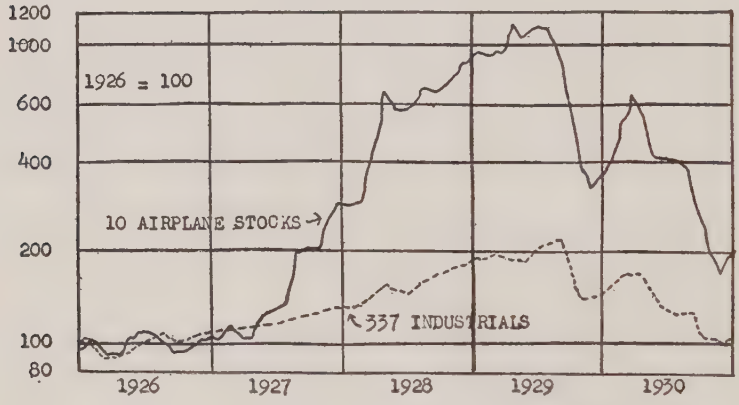
[8] See *Aviation Securities* by W. S. Aagard & Co., New York. This figure includes all types of aviation securities, such as holding company issues involving duplications and investment trusts specializing in aviation securities. The present study, however, has dropped all such duplications.

of 1164 points.[9] The relative changes that took place during the last five years of the 1921–1930 decade in the market values of ten leading stocks is further illustrated in the following chart.

CHART No. II

MONTHLY INDICES FOR PRICE OF TEN AVIATION STOCKS

Compared with Indices of 337 Industrials
1926–1930
Semi-logarithmic Scale



Source: Compiled from *Standard Statistical Bulletin.*

The influence of these speculative conditions and financial operations is further reflected by the security prices of individual companies within the industry. By November 1, 1929, the total market values of seven large holding companies had dropped from a 1929 high of $930.9 million to $432.1 million—a drop to 46.5 per cent of the former market value. This unusual decline continued throughout the next two years, and by November 9, 1931, these market values, as Table No. 1 indicates, stood at only $88,902,156. The balance sheets of these same seven companies as at December 31, 1929 and 1930, showed total assets of $253,263,140 and $228,052,048 respectively. The decline in security

[9] These figures are based upon weekly averages. Chart No. II and Appendix L, p. 186 show average monthly movements. Also see Irving Fisher, *Airplane Stocks as a Bear Raid Test*, Nov. 19, 1929 (an article released through the press).

TABLE I

MARKET VALUE OF SEVEN LARGE HOLDING COMPANIES
Highs and Lows Compared with Total Assets

COMPANY	MARKET VALUE			TOTAL ASSETS	
	1929 HIGH	OCT., 1929 LOW	1931 LOW TO NOV. 9	DEC. 31, 1929	DEC. 31, 1930
Aviation Corporation	$46,500,000	$20,250,000	$6,905,451	$39,121,133	$25,241,403
Pan. American Airway	23,484,337	8,230,950	8,166,540*	6,662,410	12,145,779
Bendix	210,315,625	107,802,500	26,472,507	70,986,235	65,867,465
Curtiss-Wright	239,481,250	106,437,500	13,584,217	78,472,925	67,122,716
Fokker-Gen	65,118,250	24,866,237	3,781,733*	12,373,779	10,458,811
N. A. T.	31,362,500	11,700,000	4,732,516	4,311,292	4,363,507
Un. Air	314,650,410	152,822,733	25,259,192	41,335,366	42,852,367
Totals	$930,912,372	$432,109,920	$88,902,156	$253,263,140	$228,052,048

* Based upon market low for the week ended November 7, 1931.

Source: 1929 market values from *Wall Street Journal*, Nov. 1, 1929; 1931 low to Nov. 9, 1931 has been computed upon basis of total number of shares outstanding as of December 31, 1930. Assets from respective balance sheets.

values throughout the industry is further emphasized by the fact that the nine airplane, airways and airport companies listed upon the New York Stock Exchange experienced a drop in the market value of their respective listings from $191,704,324, or an average of $10.74 per share as of July 1, 1931, to $110,713,371, or $6.20 per share as of October 1, 1931.[10]

Causes of Aviation Security Inflation.—While Aviation Securities were responding with great sensitivity to the prevalent economic and credit conditions, the index for 337 industrials shows that the prices of these stocks were much steadier, rising from approximately 100 in 1926 to over 200 in 1929, then falling back again to 100 by the end of 1930.[11] If allowance is made for the greater stability produced by the much larger number of stocks upon which the industrial index has been based, there still remains a wide disparity to be explained. What, then, has caused this security inflation?

Many influences have effected greater sensitivity on the part of aviation securities. One factor of great importance was that the investor, during the early stages of inflated security prices, was psychologically aware of the future possibilities of the industry. The press throughout the country began to paint a glowing picture of the future of aviation, and many investors were eager to get in "on the ground floor" of its development. The industry was often described as holding future possibilities similar to those of the automotive industry twenty years before, and numerous investors were anxious to run the risk for gain.[12]

A second factor which augmented aviation security inflation was the general market and competitive condition of the country. Aviation manufacturing companies operating prior to 1927 had begun to show substantial profits. By 1927 the old companies had succeeded in readjusting themselves after the abnormal demands made by the government during the war period, and

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[10] From *N. Y. Stock Exchange Bulletin;* July, 1931 and October, 1931, p. 2.
[11] See Chart No. II, p. 6; also see Appendix K, p. 186.
[12] As a matter of fact, however, the airplane, first flown in 1903, had been known practically as long as the automobile.

TABLE II

PERCENTAGE OF NET EARNINGS TO NET WORTH

COMPANY	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Douglas....	−78	....	..	6.5	29	76	46	21	15	23
Curtiss.....	—3	—3	15	15	11	18	26	16	6.5	5.6
Wright.....	21	19	13	13	20	14	17	22	8	−25
Alexander, Ind.*....	....	....	..	....	43	40	41	11	−34	2.5

* Did not manufacture aircraft until 1925.

the business depression of 1921–1922.[13] By 1926 there were still relatively few producing companies,[14] and these enjoyed little competition with increasing demand both from the government and the public.[15] The above figures (Table No. II) set forth the

---

[13] The impetus given the aeronautical industry during the war has had a direct influence upon the financial policies of companies that survived. While the Armistice necessitated the cancellation of many contracts and the scaling down of appropriations, still many deliveries were made as contracted, plants having to be built and expanded to make deliveries possible. A few figures may indicate the importance of the industry during the war period.

Reported Deliveries of Aeroplanes and Engines made prior to June 30, 1918:

	PLANES	ENGINES
Elementary Training Planes	4,572	7,662
Advanced Training Planes	1,046	2,579
Combat Bombing Planes	553	2,392
Total Planes	6,171	12,633

Of this total, Curtiss Aeroplane and Motor Co. delivered approximately 73 per cent of the planes and 55 per cent of the engines. (*Hughes Report to Attorney General on Aircraft Investigation*, Oct. 25, 1918.) By Act of July 24, 1917, $640,000,000 was appropriated for army aeronautics. Other aeronautical appropriations of $51,851,866.47 were passed shortly thereafter, making a total of $691,851,866.47 appropriated by the middle of 1918. By Act of July 9, 1918, $884,304,758 was appropriated for air service, $760,000,000 of which was designated for planes and accessories (also *Hughes Report*). The war ended before these appropriations were spent, but many contracts were left uncancelled. These large demands called for a great increase of productive equipment, and dumped upon the post-war market millions of dollars worth of equipment which checked the normal growth of aviation companies during the early years of the 1921–1930 decade.

[14] See *Biennial Census of Aircraft Manufacturers*, 1927, and Appendix D, p. 181.

[15] See Appendices E, I and N, pp. 182; 184; 188. The year 1926 also marked the inauguration of air mail service by private contract.

Net Earnings to Net Worth ratios of four companies which in 1927 produced approximately 49 per cent of the total domestic output.[16] Indication of favorable earnings during the years between 1923 and 1928 is further suggested by an examination of the Net Profits ratio for the whole manufacturing branch of the industry.[17] In this manner market and competitive conditions during the early stages of the inflation period encouraged the organization of new aviation companies.

A final major factor abnormally influencing the industry has been that of general credit and money conditions which of necessity are closely allied with those mentioned above. Interest rates for several years prior to 1928 were conducive to credit expansion. Call loan renewal rates remained well under 5 per cent from the end of 1921 to the spring of 1928. When New York banks by increasing rediscount rates, tightened the money situation and attempted to curtail increased borrowing for speculative purposes, the higher rates began to attract funds from accounts outside of New York banks. During 1928 the renewal rate was increased from slightly over 4 per cent to 9 per cent, and in the spring of 1929, these rates touched the highest levels since February, 1920, when they reached 10 per cent. Call money renewals averaged 4.07 per cent for 1927; 6.10 per cent for 1928; 7.71 per cent for 1929; and only 2.93 per cent for 1930.[18]

It is significant that during this same period the percentage of New York Stock Exchange member borrowings from New York banks decreased approximately 5 per cent and the percentage of call loans to New York Stock Exchange total member borrowings increased 15 per cent, while total loans to members rose from somewhat over four billion dollars to $8,549,383,979. On Jan-

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[16] Net sales of these four companies for 1927 amounted to approximately $11.2 million while the total production value of 70 aircraft and parts establishments covered in the *Biennial Census of Manufacturers for 1927* was $21,161,853. Since Alexander Industries' sales for 1927 include both airplanes and films, approximately 75 per cent of these sales were counted as film sales and thus omitted from the estimate. (See *Biennial Census of Manufacturers*, 1927, pp. 1122–23.)

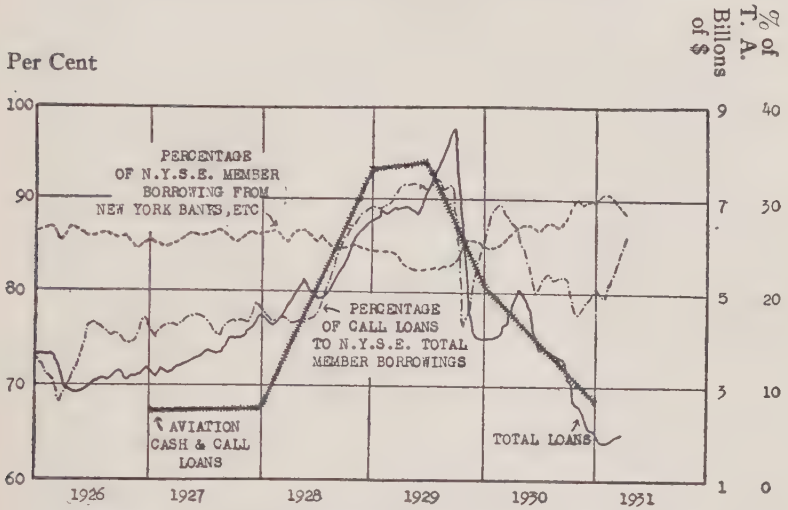
[17] See manufacturing group ratio sheet, Appendix T, p. 199. Though figures are incomplete, percentages for 1926–27 are twice that of any other year.

[18] New York Stock Exchange, *Report of the President*, May 1, 1931, p. 53.

uary 1, 1930, they had fallen to $3,989,510,273, or 53 per cent, to less than half of the previous figure.

CHART No. III

ANALYSIS OF NEW YORK STOCK EXCHANGE MEMBER BORROWINGS AND AVIATION INDUSTRY TOTAL CALL LOANS



Source: N. Y. S. E., *Report of the President*, May 1, 1931; *Call Loans* compiled from financial statements of 31 aviation companies.

The meaning of this movement is not abstruse. The security market had been flooded with funds from enterprises, individuals, and banking institutions from all parts of this country, and from foreign countries as well. Members of the New York Stock Exchange no longer found it necessary to secure all of their capital funds from New York banks directly, but instead found large supplies at their disposal offered on the Account of Others. Aviation companies, having found the sale of their securities easy, were suddenly confronted with the problem of investing large amounts of surplus cash. In 1926, nine companies carried a total cash and call loan item of $1.2 million. In 1927, thirteen companies showed $2.5 million in this item; in 1928, twenty-four companies showed $49.3 million; in June, 1929, twelve companies carried $101.7 million; in 1929, twenty-five companies

carried $69.4 million, and in 1930, twenty-four companies carried $26.0 million as cash and call loans.[19]

When these cash and call loan items are reduced to percentages of their respective total assets and compared with the increase and decrease of brokers' loans, there appears a definite relationship, as is shown in Chart No. III. Aviation companies followed the natural course in investing these surplus liquid funds. Call loan rates were attractive, the cash on hand was larger than that actually needed to carry on normal operations, so the funds for the time being were placed at the disposal of brokers, either indirectly through New York banks, or directly. However, these same companies appear to have acted quickly in withdrawing their funds during the latter half of 1929. It was the action of such creditors that forced the New York City banks to place considerable amounts back into the call loan market to ease the financial strain after security prices had broken.

Movement Toward Consolidation.—It is in the midst of this phenomenal physical and financial growth of the industry that a new development has taken place. Favorable earnings, together with the prospects of a great increase in demand for aviation products, had attracted an abundant supply of capital, and many new competing companies began to enter the field. Development of air mail service, with favorable contracts being awarded to established operators, had created a valuable outlet for production. The large increase in new capital flotations during the last half of 1928 and the first half of 1929 demonstrate, in part, the dimensions of this activity. Easy credit and financing circumstances had made it attractive for companies in various localities and branches of the industry to consolidate, thus bringing together important financial structures, producing plants, operating equipments and personnel in the creation of fewer but more important aviation enterprises.

There were several reasons that consolidation was advisable. In the first place, a structure built upon the issuance of securities for a parent company would simplify the financial structure of

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[19] Figures from combination balance sheet for all companies studied Appendix R, p. 195. Also see Chart No. XIII, p. 134.

the companies involved. Furthermore, such a combination would afford less competition among a larger number of small producers and operators; it would tend to allow greater economies in production, a stronger buying power, and presumably larger earning which would result in a stronger financial position. Again, financial consolidation would make possible an effective national sales and service organization; it would also make possible an adequate credit or instalment financing structure.[20]

Finally, consolidation was found advisable from the operator's viewpoint in order to bring together the large number of short air mail and passenger lines into several national airways, thus greatly increasing the value of the transportation services rendered to the public. The railroads had faced a similar problem in their early days, and already the federal government through the Post Office Department was bringing pressure to effect this part of consolidation.[21] This trend among operators, however, has proved to be severe upon commercial plane producers since the discontinuance of parallel lines and the consolidation of operating agreements resulted in a surplus of flying equipment which has acted as a flood upon the market. Rapidity of obsolescence, however, has been working to the advantage of the producers.

It is not unnatural, then, that a remarkably short but intense period of consolidation and combination introducing a new division of the industry has been recently witnessed. The holding company has sprung up to act as the parent for groups of subsidiary companies. In some instances manufacturing companies joined accessory or auxiliary companies with the holding company as the superimposed financial structure.[22] Again, some

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[20] This development is illustrated by a contract signed August 18, 1930, under which the Commercial Investment Trust, Inc., agreed to provide for financing of instalment sales of Stearman Aircraft Co.

[21] It has been only within the past two years that such pressure for certain operating consolidations has been clearly felt. For instance, before the 1931 air mail contract covering the routes of Western Air Express Corp. and Transcontinental Air Transport, Inc., was awarded, Postmaster General Brown required that these two companies reach an acceptable operating agreement. The result was the formation of Transcontinental and Western Air, Inc.

[22] An example of this type of development is that of North American Aviation Corp. (See Appendix A, p. 175, for list of subsidiary companies.)

manufacturing and engine companies joined operating companies,[23] while still others joined training schools or airport companies.[24]

By June 1, 1929, this consolidation movement, had created several large holding companies, three of which alone embraced approximately 48 per cent of the total assets of the industry and included 118 subsidiary and affiliated companies.[25] Since this movement apparently reached an end during the early part of 1931, much needed organization structure revisions are constantly being made in each of the large parent companies. Organization and financial structure simplification have tended to abolish the individual identity of many subsidiary enterprises as is shown by more recent lists of controlled companies.[26]

These consolidation movements within the aviation industry, as with most industries, have been closely guided by financial institutions. Since such financial strength of the industry, and since any consideration of financial policies must carefully weigh all activities relative to banking connections, methods of financing new and additional securities, and interlocking directorates as significant phases of the industry's financial policy, a virgin field lies before the researcher who may attempt to discover such conditions and analyze their many ramifications. Where has this abundant flow of funds into the industry originated? What

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[23] As Boeing Air Transport, Inc.

[24] As Curtiss Wright Corporation.

[25] This percentage is based on the one hand upon the assets resulting from the consolidation of the Curtiss and Wright interests (which were actually incorporated Aug. 9, 1929), together with the assets of the Aviation Corp. and United Aircraft and Transport Corp.; and on the other, upon the total assets of 25 companies included in this study as of Dec. 31, 1929. If taken as of June 30, 1929 only 12 companies can be included, and the percentage becomes 55 instead of 48. (For Curtiss Wright's consolidated statement as of June 31, 1929, see *N. Y. Stock Exchange Listing Application No. A 8912*, p. 10.)

Following are figures for the three companies:

	Total Assets—June 1, 1929	Subsidiaries as in 1930
The Aviation Corp.	$54,335,824.76	45 plus 5 affiliated
Curtiss Wright Corp.	82,377,491.38	29 plus 18 affiliated
United Aircraft & Trans. Corp.	30,019,047.98	21
Total	$166,732,364.02	95 plus 23 affiliated

[26] See Appendix A, p. 175.

has been the influence of this financial growth upon the industry's financial structure? How have banking and brokerage affiliations influenced the methods followed in the acquisition of capital funds? What courses of action have been followed in determining the use and productivity of the funds employed? What has been the policy of enterprises making up the industry regarding the maintenance of an adequate future flow of capital into the industry through adequate earnings and dividend payments? Such are the questions that immediately arise from a brief review of some of the more important financial and organization activities of this new industry.

2. *Purpose and Method of Inquiry*

Purpose of the Study.—It has been in search of the answers to these questions that the present study has been undertaken. Their answers concern in each instance the discovery of certain empirical facts existing within this field dependent upon conditions prevailing both here and in external fields as well. But while the answers to such questions as those concerned with the amount of capital actually invested within the industry and the returns that such investments enjoy involve a description of fact, a full answer involves a revelation of financial *policy* as well. Fact and policy are not identical for even though policy may be conceived of as a rule of expediency to direct a course of action, and fact may be thought of as a description of that course of action, still a determination of financial policy involves an understanding as to why these facts have been discovered to be as they are. This calls for an element of judgment or a criterion of measuring the effectiveness of the course of financial activities. Both must be involved in a search for solutions to these financial questions.

It is here necessary to lay emphasis upon the purpose of the inquiry as that of being concerned with policies in terms of *financial* performance as distinguished from operating, accounting, sales, or production policies followed within the industry. While it is true that operating policies, sales policies, accounting policies, credit and other less important policies with which each enterprise deals are policies which in a large measure determine

the effectiveness of those broader courses of action in terms of financial performance known as financial policies, still there is a fundamental difference between them, and it is with the financial policies that the present study is concerned primarily. It would be valuable for the industry to know exactly how long a certain type of flying equipment was used by operators before being entirely written-off through depreciation or obsolescence, for if the write-off period is shorter than the life of such equipment there remains a definite physical value in the hands of such a company which is not revealed through its financial statements. Its financial policies can be materially influenced by such a circumstance. But such action of equipment write-off concerns depreciation policy directly. Only indirectly does it influence or become a part of the broad financial policies with which this study is primarily concerned, and therefore only indirectly can it be dealt with here. Likewise sales, operating, production, and other secondary policies will be considered only as they appear to have become very close to the broad financial policies. Financial policies are those courses of activities dealing primarily with the broader financial structure of the industry. From where have the capital funds of the aviation industry been obtained? How have they been employed, and what has been their productivity? It is with such questions as these that financial policy deals.

The study, therefore, does not propose to offer a panacea for the ills of the aviation industry. It does aim, however, to probe into the important financial activities of this new industry searching for the answers to questions involving financial policies in order that the major financial problem with which the industry is now faced may be unravelled and postulated, and methods of its solutions may be briefly considered. The purpose is thus threefold: first, to discover past and present financial policies; second, to formulate the major financial problem which these policies have occasioned; and, finally, to point briefly toward a feasible solution to the problem as revealed by the study.

Limitations of the Study.—While such an inquiry, to cover the life of the industry, would have to extend back to the pre-war days of military production, it must be admitted that an analysis

over the abnormal period of government demand and inflated prices could not be expected to yield satisfactory scientific knowledge bearing upon the industry's present policies and problems. It is, therefore, essential that definite limitations be established.

The period 1921–1930 has been selected because it excludes most of the government world war demands upon the aviation industry, and because it represents a complete major cycle in our economic life, during which the industry has grown from a capitalization of $8,379,268 to the present capitalization of $279,059,185.[27] Furthermore, this analysis deals only with the industry as found in the United States. Though, strictly speaking, at least two of the companies included in the study carry on quite extensive operations in foreign countries,[28] it is nevertheless true that by far the greater part of their capital has been furnished by American investors, and the bulk of production is sold to a domestic market.[29] For these reasons, it has appeared wise to include them in the study.[30]

While the value of a study with the purpose stated as above would be greatly enhanced with the inclusion of all companies existing within the industry, both large and small, certain practical limitations have made sacrifices imperative. The selection of the concerns included, thirty-two parent companies in all

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[27] These figures are based upon the combined capital stock and capital surplus, as at Dec. 31, 1921 and Dec. 31, 1930, for all companies included in this study (duplications dropped). See note No. 34, p. 19, for estimates for the entire industry.

[28] Curtiss Reid Aircraft Co., Ltd. (Canada) and Pan-American Airways Corp. (South and Central America). Several other companies, such as the Curtiss-Wright Corp. through its foreign marketing organization, play a minor part in international trade.

[29] According to the latest figures available, total imports of aircraft and parts for 1928 equaled $507,793; exports equaled $3,664,723. (See *Air Commerce Bulletin*, Nov. 1, 1929, p. 11.) During 1930 the total exports of aircraft and parts reached $8,806,396. (See *Annual Report* of the Assistant Secretary of Commerce, June 30, 1930, p. 6; and *Special Circular No. 19*, Dept. of Commerce, Bureau of Foreign and Domestic Commerce, Jan. 31, 1931.)

[30] The original investors in stock of South American operating companies taken over by Pan-American Airways, such as the Compania Mexicana de Aviacion S. A., Chilean Airways, Inc., Pan-American Grace Airways, Inc., were largely native investors, but through exchange of stock issues upon consolidation, these holdings have become relatively unimportant and widely scattered.

(or twenty-five dropping duplications), has been purely arbitrary, having been limited only by the availability of data. It would have been, for instance, highly desirable to have included the financial operations of the Pitcairn Autogyro Corporation, for the product of this new enterprise has the possibilities of revolutionizing the industry. Likewise, an auxiliary enterprise such as the Armstrong Seadrome Company now engaged in the production of steel rafts to be anchored in mid-ocean as transatlantic airports, or the Goodyear Zeppelin Corporation at present engaged in the production of a second lighter-than-air giant, strictly speaking should have been included in a thorough inquiry into the financial policies of the aviation industry. But obviously such enterprises are still largely in the experimental stage, and since this type of producer usually remains a closed corporation until operations are at least placed upon a commercial basis, it has been impossible to include them here.

Even though the practical factor of the possibility of obtaining data has been singular in the selection of aviation enterprises, it nevertheless has proved to be both effective and equitable. Since the main body of data upon which the inquiry has been carried out was composed of all balance sheets and income accounts obtainable, covering the life of each company, it is admittedly only natural that the larger and financially stronger companies are the ones that have usually made public their financial statements at regular intervals, and that these companies, therefore, will form the bulk of data upon which this analysis is based. In a large measure this has been true. Yet it is the whole industry for which the policies and the major financial problem are being sought, and even though these thirty-two companies together with their subsidiaries represented at

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[31] As has been suggested in a discussion of the consolidation movement of the industry, shifts have been so rapid in the industry's organization structure that it has been impossible to keep up with the changes. While these thirty-two companies controlled a total of 173 subsidiaries at the end of the year 1930 (the figure upon which this percentage is based), the most recent compilation that it has been possible to make (presented in Appendix A, p. 175) shows the effect of constant mergers and absorptions in attempting to simplify the industry's organization by a reduction of the total number of companies and subsidiaries included in the study from 205 to 165 (net). The capitalization, however, has not been affected by this absorption process.

the end of 1930 only 45 per cent[31] of the total number of companies carrying on aviation activities in the United States,[32] they transacted approximately 94 per cent of the total dollar business,[33] and represent approximately 93 per cent of the total amount invested in the industry.[34] The results of the analysis, therefore, can be applied generally to the whole industry.[35]

There is yet another limitation that must be recognized. How far into the "cause and effect "relationship of facts and policies shall the inquiry probe? Clearly the casual chain is almost

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[32] *Aeronautics Trade Directory*, issued by the United States Dept. of Commerce, Aeronautics Branch (July, 1931), lists 459 companies carrying on operations in the branches of the industry covered by this study. The directory dated July 1, 1930, lists 402 companies in these same branches.

[33] This percentage is not complete, but is based upon the sales of fifteen producers of aircraft, engines, and parts for the year ending Dec. 31, 1930 ($57.2 million), and upon the U. S. Dept. of Commerce compilations for the value of all products produced during 1930 ($61.2 million). See *Air Commerce Bulletin*, Vol. III, No. 2, p. 35.

[34] Estimated total capitalization, dropping stock issue duplications equals $295,189,116 of which $279,059,185 is represented by these thirty-two (twenty-five net) companies and their subsidiaries. This total capitalization figure has been computed by adding to the 1927 total capitalization of thirteen companies covered ($14,670,978) the total new capital flotations occurring between Jan. 1, 1928 and Dec. 31, 1930 which were $255,171,143, and the new flotations for aviation investment trusts ($25,364.995). See Appendix M, p. 187.

Another method of obtaining a total capitalization figure would be to accept the compilation of the *Financial and Commercial Chronicle* of public financing of aviation companies, 1928–1930, which shows a total of $296,285,100, including aviation investment trusts. To this should be added at least $14,670,978 for financing prior to 1928, making a total of $310,956,078.

Both of these estimates include the investment trust and the latter also includes duplications. If the total capital stock and capital surplus for the companies studied be taken as of Dec. 31, 1930, a figure of $279,059,185 is obtained. Since this figure does not presume to include the entire industry, it seems quite conservative to estimate the present capitalization (actually represented by outstanding stocks) at around $300,000,000 not including duplications or investment trusts.

Capitalization as used throughout this study refers to capital stock actually authorized and outstanding, since no enterprise has assumed long-term indebtedness. Similarly, while it must be admitted that there are several ways in which the term "overcapitalization" might be used, it is here employed to denote the difference between the actual amount of capital funds obtained through the original sale of stock certificates, and that amount represented by capitalized earnings, since an examination of the balance sheet has revealed an inflated valuation of assets.

[35] The Standard Statistics Corp. stated (Mar. 13, 1931) that there were 130 units producing planes at the beginning of 1931, as compared with 215 on Jan. 1, 1930. Only forty of the present producers, according to their estimate, built nore than ten machines each last year. (Also compare with *Survey Report*, Bureau of Labor Statistics, May, 1929.)

boundless in its scope, and in the development of the analysis a consistent level should be maintained. If it be discovered that the industry has suffered from overcapitalization, the cause of overcapitalization will be sought out, and an explanation of this condition will be offered in the light of existing economic and financial conditions. But the study will not be pressed beyond this level.

Companies Included in the Analysis.—To define the limits of the aviation industry is indeed a difficult task. In its latest trade directory, the federal Aeronautics Branch lists 2818 names and addresses of companies or individuals having reported to the government as being engaged in the aeronautics business.[36] This list includes practically all producers contributing any type of commodity used in the assembly of a plane, from airplanes and aircraft engines to radio sets for aircraft and leather upholstery. It futhermore includes all types of services from operators to exhibition flying and aeronautical insurance commerical under-writing.

To include all such companies in an inquiry such as is proposed above, however, would be both quite impossible and impracticable. To include the J. G. Brill Company because it manufactures among other things, furniture for aircraft; or DuPont de Nemours and Company because it produces paints and varnishes used in airplane construction or the Budd Manufacturing Company because it produces a few parts for airplanes and engines is obviously stretching the industry to unreasonable limits. But if the aviation industry be conceived as composed of individual enterprises whose primary purpose is that of the production of aircraft, aircraft parts, and air services more definite limits to the industry are established and working conception is obtained.

Even then the classification is not wholly distinct, and serious criticism may still be offered as to the inclusion of certain companies within the industry. What, for instance, is to be done

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[36] *Aeronautics Trade Directory*, U. S. Dept. of Commerce, Aeronautics Branch, revised July 1, 1931. This directory, however, includes many duplications where the same enterprise is engaged in the production of two or more products or services.

with a company like Bendix Aviation Corporation whose bulk of production lies in the automotive rather than the aviation industry, yet whose activities within the aviation field in the production of important aircraft parts such as ignition equipment, aeronautical instruments, airport light generators, propellers, engine starters, and aircraft wheels and brakes make it the leading auxiliary company in the industry? Again there occurs the question of Alexander Industries, Inc., a company organized in 1921 to produce educational and other films, but which on August 5, 1925, branched out into the aircraft manufacturing field to become one of the leading independent producers of small planes toward the end of the past decade.[37] Approximately two-thirds to three-fourths of the business of this company is concerned with film production. Yet it holds an undisputably important position in the aviation industry. To include such companies as these would extend the results of the inquiry somewhat into fields other than purely aviation, but to exclude them would considerably limit the application of conclusions drawn. It has thus seemed wisest to include these two companies by making constant allowance for the influences of their outside operations throughout the inquiry.

Another question can be raised as to the advisability of excluding or including aviation investment trusts in the financial analysis presently to be undertaken. With but one or two exceptions, the incorporation applications of this group of enterprises specifically state their purpose as being that of promoting the various branches of the aviation industry through the purchase and holding of aviation securities. Since such activities have unquestionably increased the demand for aviation securities, and since their own financial performance has been in turn dependent entirely upon the financial performances of the aviation companies whose securities they held, it might seem that these aviation investment trusts were thus a vital part of the industry, and should therefore be included in the analysis along with other branches.

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[37] The relative importance of this company is illustrated by the fact that the aircraft division produced and sold 228 airplanes in 1927 and 340 for 1928. Expansion plans called for a production of 1,000 in 1929 and overexpansion resulted in the sale of inventories at a loss in 1930.

The function of the aviation investment trust, however, is fundamentally different from that of the aircraft producer, airport company, operator, or the accessory manufacturer. It is equally true that there exists a fundamental difference between the investment trust on the one hand, and the holding company on the other. For the holding company as found in the aviation industry has become a parent company actively engaged in the guidance of financial activities of each subsidiary, and recently has grown even more closely associated with all operations of its subsidiary companies through their complete dissolution. To throw the holding company out of the present analysis would thus mean the throwing out of over half of the aviation industry as herein conceived.

But not so with the investment trusts. On the contrary, there are several definite reasons why it has appeared advisable to exclude them from the main statistical data upon which the analysis has been made. In the first place, their function is distinct from that of other enterprises believed to be a vital part of the aviation industry. They take no active part in production of aircraft or parts, and their production of service to the industry at first was one of considerable duplication, for the funds with which they purchased aviation securities were secured in turn from the public offering of their own securities, and they thus acted as a mediator in the acquisition and distribution of capital funds. It has, therefore, appeared logical to treat this group as an agency in the acquisition of capital funds.

The exclusion of aviation investment trusts has been further justified by the reversal in their investment policies witnessed since heavy losses were sustained after the stock market crash. Since this time, without exception they have diversified their funds by investing heavily in industries other than aviation. A final justification appears in the fact that this group, at best, is relatively unimportant, and influence upon the industry's financial problem could have little if any change upon conclusions reached through their omission.

It is with the above conception of the industry that the present study has been undertaken. A list of the thirty-two parent companies and their subsidiaries (presented in Appendix A,

page 175) indicates the scope of the inquiry. The balance sheets analyzed actually cover the financial operations of 205 aviation companies representing 93 per cent of the industry's financial structure.[38]

By including such a large portion of the industry, certain financial structure duplications have been unavoidable. Thus in the list of companies (see Appendix A) it will be noted that both Curtiss Aeroplane and Motor Co., Inc. and Wright Aeronautical Corporation are holding companies within themselves, and the issuance of Curtiss-Wright Corporation stock was used principally to retire the old stock issues of the Curtiss and the Wright companies. For this reason, their operations, while reported individually in their respective financial statements up to the formation of the Curtiss-Wright Corporation, have been excluded in the final combination of all consolidated statements for the entire group and for the industry as a whole, in order that there would be no duplications. The process of dropping such duplications explains the fact that even though thirty-two companies have been included in the study, total balance and ratio sheets for all branches have eliminated seven of the individual companies whose financial activities have been included elsewhere. The total number of companies appearing upon this combination balance sheet representing the financial structure of the entire industry is, therefore, never more than twenty-five.[39] Thus all companies taken over by holding companies (as Wright Aeronautical Corporation, Curtiss Aeroplane and Motor Company, Inc., and Curtiss Airports Corporation) have been dropped from the statistical compilations at the time of incorporation of the parent company.

The individual enterprises making up the industry as viewed above fall logically into four broad divisions. First, there is the manufacturing branch of the industry made up of those companies primarily engaged in the production of aircraft and engines. Secondly, there exists an operating group whose activities are centered in commercial air transportation. Thirdly,

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[38] See note 34, p. 19.
[39] See combination balance sheet (Total—All Groups), Appendix R, p. 195.

there exists what may be termed an auxiliary branch whose activities are concentrated in a combination of businesses including the manufacture of aircraft parts, the operation of airports, flying schools, repair and sales stations, and other miscellaneous activities such as the manufacture of airplane machinery and parachutes. And finally, there is to be found the holding company group, which as has already been suggested has grown to be the most important of all branches of the industry and whose operations include an inseparable combination of operations carried on by all three of the other groups. The following table indicates the relative size and importance of each of these branches.

TABLE III

RELATIVE SIZE AND IMPORTANCE OF THE BRANCHES OF THE INDUSTRY

GROUP	NO. OF COS.	DUP.	NET	TOTAL ASSETS AS AT DECEMBER 31, 1930	
				GROSS	NET—NO DUPLICATIONS
Manufacturing.....	13	3	9*	$56,807,630	$26,256,407
Operating.....	4	0	4	27,604,683	27,604,683
Auxiliary.....	8	3	5	110,420,398	74,853,950
Holding Co.....	7	0	7	170,615,845	170,615,845
Total.....	32	6	25	$365,448,556	$299,330,885

* Detroit Aircraft Corp. figures for 1930 were not available.

Data Used and the Method of Analysis.—Since financial policy deals with the broad aspects and facts concerning various phases of financial activities, and more particularly with the acquisition, the use, and the productiveness of capital funds, a determination of these financial policies and a consideration of the major financial problem demand two types of financial data, one supplementary to the other. The more important of these two types is that of a complete and broken down series of income statements and balance sheet items for each of the enterprises within the industry, for it is this type of data which reveals most fully the financial policies followed by an industry over a period

of time. But an analysis of this data in the determination of such policies can be greatly enhanced in value by supplementary data of a type revealing such policies of the industry relative to financial activities as those concerning banking and brokerage relationships in obtaining capital funds, dividend policies in strengthening the future supplies of such funds, and stock issue policy.

A search for the best method of treating this main body of data made up of detailed financial statements of each company has led to the acceptance of an analysis of the changes between certain significant relationships of important balance sheet items, for in analyzing the movements of such ratios over a period of years it is possible to discover the financial policies that the industry has followed in causing these trends to move as they have moved.[40]

But the data obtainable have been far from ideal, and the lack of detailed financial statements has restricted the value of such a proposed analysis.[41] Operating and depreciation policies which,

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[40] Financial ratios suggested by Hall, Hayes, Kester, and Bliss have been slightly modified to supplement those suggested by Professor Wm. C. Schluter in *Credit Analysis* (Prentice-Hall, Inc., New York, 1925) for application in the process of analyzing the financial statements.

[41] Seven companies are at present listed on the N. Y. Stock Exchange and twenty-five are listed upon the N. Y. Curb Exchange. However, the data even at these sources, while well broken down at times, are not continuously broken down. The N. Y. Stock Exchange, for instance, requires a complete breakdown of both parent and subsidiary companies at time of original application for stock listing, but thereafter the parent company's financial statements alone meet the Exchange's requirements. The files at the N. Y. Curb Exchange reveal the fact that listed companies are not required to submit regular periodic audit reports after original listing. While some companies continue this practice of furnishing broken-down statements to the exchange, most of the aviation companies listed submit either signed or unsigned annual reports also made public to their stockholders. Obviously these listed companies would not choose to make public through such sources as *Standard Statistics*, Poor's or Moody's any financial information which they had not furnished their stock exchanges. This proved to be the case upon careful inspection of all files at the N. Y. Curb Exchange, N. Y. Stock Exchange, *Standard Statistics*, and *Moody's Industrial Service*. With few exceptions the individual concerns either refused to answer or disregarded altogether letters of inquiry through which it was hoped data from primary sources would be obtainable. Notable exceptions to this were Curtiss-Wright subsidiaries, Western Air Express Corp., Warner Aircraft Corp., and several others indicated by the set-up of the various balance sheets. Thus some of the companies either felt that this financial information was already made public, or believed that the use that was to be made of the information requested would not injure them.

as was previously stated, often lend a heavy influence upon financial policies, cannot be discovered unless the financial information is continuous and completely broken down for each enterprise within the industry. Moreover, the study has been further limited because detailed statements obtainable for some companies have not been obtainable for all. Such cannot be used only in so far as all other companies under consideration have issued detailed statements. Where these have been obtainable, their continuous course of years has been too short to make them of any particular value. In view of the recent Post Office Department requirement of a uniform system of accounts for air mail operators, one may expect detailed data to be compiled in the future which will afford a complete analysis of certain financial and operating policies herein sacrificed.[42] But despite these suggested inadequacies, it is hoped the present study will contribute something of value to the industry, for within the balance sheet items are concealed definite policies involving financial difficulties. The purpose at hand is to discover these policies, to draw out the major financial problem, and to point toward a possible solution.

Explanation of Balance Sheet Consolidation.—Five steps in the preparation of the main body of data have been followed. First, the individual comparative balance sheets and income accounts over the life of each company (or from 1921 to date) were compiled. Second, individual 100 per cent balance sheets and sheets with each item reduced to a percentage of its respective item average were computed. Third, certain significant financial ratios (see Appendix P, page 192) were computed from the individual balance sheet items. Fourth, a total balance sheet for each branch of the industry was compiled, and this was checked by computing the ratios and matching them with the total ratios for the individual branches. This done, the final step was taken when the total for the four groups was computed, thus giving the total combination balance sheet, 100 per cent total balance sheet, and the total ratio sheet for all branches.

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[42] See U. S. Post Office Department, *Uniform System of Accounts for Carriers by Air.* First issue approved July 1, 1930.

These branch or group and total financial statements, therefore, form the basis for the forthcoming analysis, to be supplemented by the corresponding statement for each individual company, and other data demonstrating financial activities of a more general nature.

In consolidating the individual balance sheets it has been necessary to combine a number of items appearing upon the sheets of several companies in order that all balance sheets may be made comparable. This combination has, on the whole, followed a natural classification. In a few cases a question might have been raised concerning the authority for the combination. It must be remembered, however, that the study proposes to deal with the financial policies of the industry which are largely demonstrated by the trends of important financial ratios, and even though the possibility of a difference in judgment in making combinations has been present, it has been infrequent, and the analysis of trends revealed by the ratios on the group and total sheets has been left unharmed.[43]

Definition of Terms.—Certain inescapable peculiarities in accounting practice within the aviation industry have necessitated deviations from conventional accounting procedure. One departure has been made necessary in the treatment of the Capital and Capital Surplus items. It has been quite customary for an aviation company to sell, let us say, $100,000 worth of stock, place $95,000 on the balance sheet as capital, and carry the remaining $5,000 as capital surplus. Since it has obviously been impossible to detect this procedure in every instance, a consistent method of treatment has been followed by combining all such items as Capital and Capital Surplus. Only that which

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[43] For instance, the Consolidated Balance Sheet for Consolidated Aircraft Corp. as at Dec. 31, 1928 carried the items of Accounts Receivable-officers; Accounts Receivable-customers; Notes Receivable-employees; and Notes Receivable-others. All were carried as current asset items. Apparently the Account Receivable-customer item is the only real current asset item in this group. Nevertheless all four of these items were thrown together as Accounts and Notes Receivable in the Combination Balance Sheet. The writer felt a lack of understanding on the part of the company for such a classification but believed any change in the group ratios would have been highly negligible. If these three items are misplaced, the error to the Current Assets of this company is only 3.2 per cent. To Total Current Assets of all groups it would be only .033 per cent or .00033.

has been built up as earned surplus is so designated and treated.

Another departure has been forced in the determination of net worth. In the present study this item has been determined by subtracting from Total Capital and Surplus the item of Goodwill, Patents, and Designs. This procedure has appeared advisable due to the popular custom of many companies of carrying heavy intangible items on the asset side of the balance sheet, that is, intangible items such as Goodwill, Patents, and Drawings which present little or no real value because of the rapidity of technological improvements, greatly increased competition, a remarkable development of able engineering personnel, and the gradual expiration of patent rights which were doubtless once very valuable. Several companies have already completed the write-off of these intangible items.[44]

It must be frankly admitted that in one or two cases this procedure has led to peculiar results where, for example, the Surplus item appears as large as the Net Worth.[45] These conditions, however, have been indeed rare, and proper recognition in the analysis has explained any undue influence that may have arisen. Uniformity in treatment has amply justified these few accentuations. Strictly accurate treatment of the Goodwill, Patents and Drawings item would demand that it be evaluated, and that the influence of write-off policies in each case be carefully weighed and analyzed in the light of the broader financial policies. But as has already been pointed out, such is both impossible and impractical, for detailed information as to this intangible write-off policy has not been uniformly available, and even so, such a treatment would lead the study too far from its examination principally of the broader financial policies.

Another departure has been found necessary in the treatment of Current Debt which includes the items of Notes, Acceptances and Accounts Payable, plus Accrued Liabilities, and less Current Reserves. It has been necessary here to include as Current Reserves all reserves on taxes, for in most instances these items have appeared inseparable on the balance sheets of individual

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[44] As, for example, Douglas Aircraft Corp., Waco Aircraft Corp., Aviation Corp., National Air Transport, and others.

[45] As with the Bendix Aviation Corp.

companies. While reserves for taxes should have been included as a part of Current and Total Debt, their necessary inclusion as a part of Current Reserves has led to a small error. But since this item (of Current Reserves) has been below 2 per cent of the Total Current Liabilities consistently, the percentage of error, even assuming that all the items were represented by tax reserves, has been very low, and the procedure has thereby seemed justifiable. The ratio Net Worth to Total Debt (and its inverse) is the only relationship affected by this variation.

A further important deviation from conventional accounting practice has been made relative to Fixed Assets. This item is composed of the Plant, Equipment, and Capital Investment items added to that of Goodwill, Patents and Drawings, but less Reserves for Depreciation. It must be admitted that by including this latter account there have been intangible items added to Fixed Assets, but the companies under analysis have consistently carried these items here if carried at all, and we have had no way of measuring their value. The inclusion of this "intangibles" item in the computation of Fixed Assets appears inconsistent with a treatment which has excluded it from a part of Net Worth, but this classification has added to the value of certain relationships combined, and the analysis has made allowances for the difference in the trend movements that this course of treatment may have occasioned.

In ordinary financial analyses Fixed Investments are taken as the sum of Fixed Assets and Other Assets, the latter item including Deferred Charges, Investments, sometimes Deficits, and all other assets neither Current nor Fixed. However, in the present study the most important item outside Current and Fixed Assets appearing on the asset side of the balance sheet has been that of Investments alone. Since this item has usually represented actual investments in other or subsidiary companies, it has been treated as such. The account of Fixed Investments, so designated, refers to Investments plus Fixed Assets. This change has been made to fit the investment conditions of the most important branch of the industry—the holding companies. In this way other accounts usually carried under Other Assets have been dropped, but they have been unusually small, so the accuracy of trend movements has remained intact.

Other items require less explanation as to their respective meanings. Total Debt as used throughout the inquiry includes Current Debt plus Mortgages and Bonds. Another deficiency in the study caused by lack of sufficient data must be recognized in connection with the treatment of the two Debt items (Current and Total). It would be highly desirable to treat inter-subsidiary and intra-company debts as distinct from external debts, for obviously the former is a relatively unimportant item when dealing with the financial structure of the parent company, while the latter often plays an important part in influencing financial policies. However, in but a few instances has it been possible to determine the exact nature of these short and long-term credits. The unavailability of this financial information has thereby precluded separate treatment on the whole, but individual treatment will be offered wherever possible.

While Net Earnings represent the company's earnings before taxes and other items of unusual write-offs have been met, Net Income, on the other hand, refers to that net amount which can be added to surplus or paid out in dividends. Net Profits (on sales and operations) have been transferred directly from the individual income accounts of the companies. Security Investments as here used include all government and marketable securities regularly listed. Net Working Capital has been computed by subtracting Total Current Liabilities from Total Current Assets. Capital Stock represents all stock actually issued and outstanding. Total Capital has been computed by adding Total Debt to Net Worth. In this manner, the item of Goodwill, Patents, and Drawings, together with that of Deficits (shown upon the assets side of the balance sheet) have been excluded, thus causing the account of Net Worth plus Total Debt to be identical with that of Total Capital. All the remaining accounts demand no further comment since they have been used without modification or alteration of meaning.

Development of the Industry's Financial Policies.—The preceding pages have been offered as a setting for the analysis followed throughout the study. Funds have flown freely into this new industry. What has been their source? How have they been portioned into the various phases of its financial structure? Have they been sufficiently productive?

Our purpose calls for no further exposition. If the financial policies revealing the answers to such questions relative to the industry's financial activities are to be discovered, and the major financial problem which they reveal considered, it becomes necessary to analyze both the major body of financial data in the form of important shifting balance sheet relationships, and the supplementary data further exposing broad financial policies as has already been suggested. Such a treatment requires a five-fold division of the analysis. First, financial policies in the acquisition of capital funds should be developed. This will be followed by a development of (2) financial policies relative to capital distribution and usage; (3) policies shown through working capital; and (4) policies shown by other aspects of the industry's earning power. The analysis will be concluded with (5) a summary and conclusion, in which may be brought together the financial policies disclosed throughout the previous analyses, a statement of the major financial problem made, and possible means of its solution briefly suggested.

CHAPTER II

Financial Policies in the Acquisition of External Capital Funds

The introductory chapter has presented in broad outline the financial growth of the industry, and has stated the best methods of revealing its important financial policies and of discovering its major financial problem. Policies centering around the acquisition of capital funds involve several aspects: (1) Banking and other financial institutions as a source and agency in the acquisition of funds; (2) the supply furnished by owners and lenders, involving the relationship between owned and borrowed capital; (3) capital funds acquired through reinvested earnings, determined by the relationship between surplus and net worth; and lastly (4) the supply contributed from long-term and short-term credits, shown by the relationship maintained between these two debt accounts. It is by means of a close analysis of the movements of these important relationships, supplemented wherever possible by more general information, that a discovery of the industry's financial policies in the acquisition of capital funds is made possible.

An analysis of policies existing within the aviation industry as a whole has demanded a separate treatment of each group, for financial conditions and activities are widely diversified, and a true determination of the industry's general financial policies can be gained only after a synthesis of the policies followed within the several branches of the industry has been made. In similar manner, it is equally true that the financial policies of each branch, in turn, depend directly upon the policies of each individual enterprise within that branch. Analysis of the industry, therefore, depends upon analysis of each company within the industry.

It is here necessary to recognize an important limitation of the analysis treatment, for the scope of this inquiry does not permit an individual analysis of each of the thirty-two companies (with their respective subsidiaries) upon which the study is

based. Nor does the treatment of such data as banking or brokerage affiliations in influencing the acquisition of capital funds permit such individual treatment. While the financial activities of each company have an important influence upon group policies, only those having an abnormal influence upon what appears to be well established financial policies of the several groups, or of the entire industry, will be reviewed. Any further presentation of individual activities would endanger the broad and more general picture that it is hoped may be herein presented. The policies of some of the more important enterprises can be read into the interpretation through supplementary statistical data scattered throughout succeeding pages.

It has been suggested that the acquisition of capital funds involves four important aspects. The present chapter proposes to discuss two of these, since it is directed toward (1) a determination of the agencies used in acquiring capital funds (and their importance as a source of funds), and (2) a consideration of the external sources of funds employed within the manufacturing, operating, auxiliary, and holding company branches of the industry, and within the industry as a whole. The chapter immediately following will continue the analysis of the remaining two aspects by (3) an examination of the extent to which reinvested earnings have been an internal source of capital funds, and (4) a consideration of the nature of funds acquired through long and short-term credits.

1. *The Part Played by Financial Institutions in the Acquisition of Capital Funds*

Banking Relationships of the Industry.—While it has been impossible to uncover the intimate dealings that financial groups have had with the aviation industry, still certain of these relationships have become public knowledge. In the early stages of the organization of United Aircarft and Transport, the Boeing group was financed largely by the National City Bank through the National City Company.[1] The Harriman group has been

[1] Mr. Gordon S. Rentschler, president of the National City Bank of New York and brother of Mr. Frederick B.B. Rentschler, president of United Aircraft and Transport Corp., is on the Board of Directors of the United Company. Mr. James P. Ripley, Vice-president of the National City Co., is also a member of the latter company's Board.

largely responsible for the organization and financing of The Aviation Corporation.[2] This same group still retains large interests in the railroad field. Similarly the Keys and Hoyt groups have been instrumental in financing the expansion of the old Curtiss and Wright interests.[3] Other aviation companies have sought to establish banking and brokerage relations, while in some instances they have been forced to this action because of the precipitous decline of aviation and other securities.[4]

Those companies which have not been able to establish strong banking connections and have lacked shrewd managerial ability have often been forced into insolvency.[5]

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[2] W. A. Harriman is Chairman of the Board of Directors.

[3] Richard F. Hoyt is Chairman of the Board while C. M. Keys is president.

[4] One aviation investment trust, for example, secured a loan of $115,000 cash in July, 1930 and $240,000 cash in Aug., 1930 from the Chase National Bank after its current assets had decreased from $3,428,459 on Dec., 1928 to $83,714.67 on Dec., 1930. During this same period total assets diminished from $4,861,420 on the former date to $961,931 on the latter. Depreciation in market value of listed aviation and other securities was largely responsible for this loss of working capital and write-off of assets.

[5] Business conditions prevalent throughout the past two years have forced many liquidations. These losses, together with those sustained by managerial fraud, have caused large losses to aviation investors. Witness the following accounts:

On Sept. 11, 1930 it was announced at Wilmington, Del., that a receiver for the Eastern Aircraft Corp. had been appointed. The plant and assets of the corporation were sold on foreclosure of a mortgage. This company had 190,000 no par shares outstanding, 70,000 of which were issued at 12.50 (Aug., 1929). At $12.50 the total stock outstanding represented an investment of $2,375,000.00.

On Oct. 25, 1930 the Aeromarine Plane and Motor Co. certified to the Secretary of State of New York that it had decreased its capital from $1,025,000 to $10,250.

On Nov. 22, 1930 the Aeromarine Klemm Corp. (Inc. June 1, 1928) with a capitalization of $1,210,000 was placed into the hands of receivership. At that date the total indebtedness amounted to approximately $575,000 including accounts payable, obligations to banks and other notes payable.

On Dec. 5, 1930 the assets of Command-Aire, Inc., were purchased at a receiver's sale on a bid of $7,500. This company, incorporated Mar. 15, 1928, had a capitalization of $600,000.

On Jan. 27, 1931 a receiver was appointed for New Standard Aircraft Corp. It was asserted that the company owed debts of $100,000 it was unable to pay, and that it had been unable to meet its payroll for three weeks. The firm's assets were listed at $115,000 including $75,000 worth of materials and finished products, and real estate worth $40,000. This company was incorporated in 1928 to succeed the Gates-Day Aircraft Corp. Capital outstanding consisted of 77,314 shares of no par common stock, 25,000 shares of which were offered at $17.50. At this price the shares represented an investment of $1,353,995.00.

Since these relationships are important in their influence upon the financial strength of the industry, and since any consideration of financial policies must examine these activities together with those relative to the class of stock issued, methods of financing new or additional securities, and interlocking directorates as significant phases of the industry's financial policy, it has appeared wise to postpone a further examination of these relationships until a better conception of other policies has been gained. This discussion will be found in Chapter VI of the analysis, although, as has already been suggested, such a consideration cannot be exhaustive at a time so quickly following the actual occurrence of these activities.[6]

Marketing Capital Funds Through Brokerage Houses.—Brokerage houses have been used extensively by the industry as an agency in the acquisition of capital funds. While in a few instances, affiliations between the industry and security underwriters through interlocking directorates have brought the industry in contact with capital funds from the public without additional cost, these services have, on the whole, been paid for, either in the form of cash paid outright and charged to organization and developmental costs, or by the issuance of warrants and stock purchase certificates held or traded on by those performing the marketing services.[7]

When judged by the number of brokerage firms attracted to this new business, elaborate aviation statistical research departments established, daily financial bulletins, special reports, and the flood of aviation investment letters and other literature circulated at the time of the speculative activities during 1928 and 1929, this brokerage business was doubtless a profitable one. Compilations show that a total of 148 different agencies took part in the underwriting and distributing of at least one aviation

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On Feb. 14, 1931 it was announced through the press that 58 stockholders of the Marchetti Motor Patents, Inc. and the U. S. Aircraft Corp. had brought suit for the recovery of $1,560,000. It was charged that this amount was "juggled and dissipated" through an interlocking directorate. The Marchetti Corporation was organized by an inventor of an airplane motor.

Source: Compiled from *Standard Statistics.*

[6] See pp. 142–148.

[7] A discussion of this procedure has been taken up in Chapter VI, pp. 146–148.

issue. Out of this total, 123 agencies were brokerage houses, two-thirds of which were located in New York and the remainder in various cities scattered throughout the nation. In nineteen individual cases the company issuing stock did so directly to the stockholder without the services of an underwriting company. In three instances the security affiliates of banking institutions underwrote or offered the new flotations, while in three other instances aviation investment trusts took over a block of stock, thus taking advantage of a brokerage price at which the stock was added to its portfolio.[8]

Among the brokerage houses most actively engaged in the pormotion of aviation security issues, James C. Willson and Company leads with a list of ten.[9] The National Aviation Cor-

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[8] These figures have been compiled from a list of brokerage houses underwriting aviation issues, presented in Appendix II, p. 220. The banking affiliates referred to are National City Company, Baltimore Trust Company, and the California Company. Aviation investment trusts underwriting stock issues were North American Aviation Corp. (now a holding company) which in May, 1929 underwrote a block of Curtiss Airports Corp. stock; Air Investors, Inc. which in March, 1929 underwrote stock issued by Stout D. & C. Air Lines, Inc. and the Aviation Corp.; and the National Aviation Corp. which between September, 1928 and May, 1929 underwrote stock issued by Curtiss Flying Service, Sikorsky Aviation Corp., North American Aviation Corp., Curtiss-Caproni Corp., Roosevelt Field, Inc., and Curtiss Airports Corp.

[9] The brokerage houses or underwriters offering stock of three or more aviation companies follow:

James C. Willson Co.
- National Aviation Corp.
- Curtiss Flying Service, Inc.
- Sikorsky Aviation Corp.
- North American Aviation Corp.
- Curtiss-Caproni Corp.
- Aviation Corp. of Calif.
- Central Airport, Inc.
- Southern Air Transport
- Aviation Securities Corp. of New Eng.
- Curtiss Airports Corp.

National Aviation Corp.
- Curtiss Flying Service
- Sikorsky Aviation Corp.
- North American Aviation Corp.
- Curtiss-Caproni Corp.
- Roosevelt Field, Inc.
- Curtiss Airports Corp.

Knight, Dysart & Gamble
- Curtiss-Robertson Aircraft Corp.
- North American Aviation Corp.
- Nicholas-Beasley Aircraft Co.
- Detroit Aircraft Corp.
- St. Louis Aviation Corp.

Blair & Co., Inc.
- Maddux Air Lines, Inc.
- North American Aviation Corp.
- Curtiss Airports Corp.

Bond & Goodwin & Tucker
- Maddux Air Lines, Inc.
- North American Aviation Corp.
- Aviation Corp. of Calif.
- Curtiss Airports Corp.

G. M. P. Murphey & Co.
- National Aviation Corp.
- Sikorsky Aviation Corp.
- North American Aviation Corp.
- Curtiss-Caproni Corp.
- Curtiss Airports Corp.

E. H. Holmes & Co.
- Cessna Aircraft Co.
- Swallow Airplane Co.
- General Aero Corp. of America

poration offered blocks of stock issued by six different companies: Knight, Dysart and Gamble, and G. M. P. Murphey and Company each offered stock of five; Bond and Goodwin and Tucker offered four; while Pynchon and Company, Hitt Farwell and Company, Blair and Co., A. A. Durante and Company, Marlon S. Emory and Company, E. H. Holmes and Company, Hemphill, Noyes and Company, Janney and Company, and Edward B. Smith and Company each offered blocks of securities issued by three aviation companies. Fifteen other brokerage houses accommodated two aviation companies each.

That the larger and more important aviation security offerings were marketed through a large number of brokerage houses is demonstrated by the list of securities issued and underwriters presented in the Appendices (page 220). North American Aviation Corporation's $30,000,000 issue offered in December, 1928 was handled through fourteen different houses. The $40,000,000 issue of The Aviation Corporation publicly offered in March, 1929 was marketed through fifteen houses, while the issue of Curtiss Airports Corporation involving over $31,000,000 in May, 1929 was offered by twelve different brokerage companies.

These facts clearly show the breadth of the security market over which these aviation investments were scattered. Furthermore they demonstrate the part that these agencies have played in the acquisition of capital funds and suggest the influence upon the industry's financial structure which doubtless has been affected as financing arrangements were completed, and funds were obtained. What has been the extent to which this source has

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Hemphill, Noyes & Co.
  North American Aviation
  Aviation Corp. of California
  Curtiss Airports Corp.
Janney & Co.
  North American Aviation Corp.
  Central Airport, Inc.
  Roosevelt Field, Inc.
Edward B. Smith & Co.
  Central Airport, Inc.
  Roosevelt Field, Inc.
  Aviation Corp.
Marlon S. Emery & Co.
  Consolidated Instrument Co.
    (2 blocks)
  Brunner-Winkle Airplane Corp.
A. A. Durante & Co.
  American Eagle Aircraft Co.
  Fairfax Airports, Inc.
  Lincoln Aircraft Co.
Hitt Farwell & Co.
  Fairchild Aviation Corp
    (privately)
  Roosevelt Field, Inc.
  Aviation Corp.
Pynchon & Co.
  Universal Aviation Corp.
  Roosevelt Field, Inc.
  Aviation Corp.

composed the capital funds of the industry? How much have aviation companies paid for this service in the acquisition of funds? Further inquiry should aid in the search for the answers to these and other questions which such considerations give rise to.

Aviation Investment Trusts as an Aid in Capital Acquisition.—A third financial agency that has recently arisen to serve the industry in the acquisition of capital funds is that of the aviation investment trust. While, as was pointed out in the introductory chapter, the sale of the securities of this group of financial institutions has tended to absorb the funds of investors who would have invested directly in aviation securities, there has unquestionably been a certain amount of capital furnished the industry through this agency. This portion would otherwise have been diverted into other fields, for only through the aviation investment trusts' diversified portfolios would certain investors have placed their funds in aviation securities. In so far, then, as this group of investment trusts secured funds from investors who would not otherwise have placed their investments in individual aviation enterprises it has aided in the acquisition of additional funds. But this aid is conditional upon a continued portfolio of aviation companies which, as already has been noted, has not been true. To what degree did these investment trusts aid in the acquisition of capital funds during the intense financial activities of the industry, and what condition has caused them to reduce their present investments in the industry?

The answer need not be sought far off, for it can be found in a brief review of the aviation investment trusts' financial growth and the returns from aviation investments. Four important investment trusts were organized in 1928,[10] and these together with a fifth company that during this year branched out to include investment trust activities,[11] has combined total assets as at

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[10] These four companies were Air Investors, Inc.; Aeronautical Industries, Inc.; National Aviation Corp.; and Aviation Securities Corp. (actually issuing first balance sheet in April, 1929).

[11] Aero Underwriters Corp. This company has been included in this group since, even though it is an underwriting company, approximately three-fourths of its assets are invested in securities, and several subsidiaries are interested in phases of the aeronautical industry.

December 31, 1929 of $17,431, 553.[12] By the end of the following year a sixth important company (Aviation Securities Corporation of New England) was organized, and total assets for the group, swelled by this new company and by increased activities, reached a high point of $23,130,927. Heavy shrinkages in investments by December 31, 1930, however, reduced these total current assets to $18,846,765[13] Compilations of capital flotations during this same three-year period (1928–1930) show that investment trusts were organized involving a total capital flotation of $25,364,995.[14] If all funds secured by these aviation investment trusts are assumed to have been directed into the aviation industry through the purchase of securities which would otherwise not have been purchased, this source could at best account for less than ten per cent of the new capital funds which reached the industry during this period.

The importance of this group as a source of capital funds is further lessened by changes in their investment policies prompted by the collapse of security prices and further shrinkages of assets. While the applications for incorporation of these companies stated the purpose of organization to be that of furthering the field of aviation by investments, the unusual decline in aviation stocks has caused a change in portfolio make-up to one of broad diversification into several important fields of enterprise, as the automotive, industrial, and railroad.

This change has been forced by the necessity to protect further interests and to show a profit from operations. The percentage net income bore to net worth for the companies as given above was 3.2 in 1928. For December, 1929 a deficit equivalent to to 4.1 per cent of net worth was carried upon the combined income accounts of the six investment trusts included, while by the end of the following year this deficit had increased to 19.5

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[12] Compiled from the companies' individual balance sheets.

[13] The net worth item for all six companies combined decreased from $20,606,040.94 in December, 1929 to $15,927,839.34 in December, 1930. This represented but a small part of the actual paper loss on investments, for with but one or two exceptions, investments were carried at cost, rather than at market value. The deficits were created, then, upon sale of securities held. Current assets were also increased during these two periods by the purchase of government securities.

[14] See Appendix M, p. 187.

per cent of net worth. Particular references will serve to further emphasize this cause of the retraction of funds from the aviation industry.

The drop in the net income of Aeronautical Industries to a deficit equivalent to 42 per cent of net worth (in 1930) resulted from actual losses sustained in the sale of securities. The income account for the first period of 1929 showed a net profit of $176,-813.30. By the end of the year this account showed that whereas profit from the sale of securities amounted to $346,225.86, losses sustained amounted to $422,527.40, which, after all provisions resulted in a net loss for the period of $93,376.18. Loss from the sale of securities for the period ended December 31, 1930 amounted to $530,318.71[15]

The income of Aviation Securities Corporation is unusual in its trend from a percentage of net worth equal to 4 in 1928 to a deficit of 57 in 1929, followed by an increase in 1930 to 19. The lowest level was reached in 1929 and a recovery experienced by the end of 1930. In explaining the heavy cut into net worth occasioned by the deficit for the period, ended December 31, 1929, the president stated that the company sold certain stocks and wrote off market or paper losses on stocks owned at the close of the year in order to absorb the losses which had resulted from market deflation.[16] By the end of 1930 net profits from the sale of securities after a further inventory adjustment reduced the losses sustained in the preceding year. A change in the policy of portfolio commitments was also demonstrated when only three aviation companies were included, all the others being representatives of the oil, automotive, public utility and industrial industries.[17]

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[15] The balance sheet for this period revealed that total stocks costing $1,758,585.54 had an actual market value of $764,121.50 at Dec. 31, 1930. Among the stocks held in the portfolio were 1,300 shares of National Aviation Corp. stock which had cost $53,325.00 and at that time had a market value of $5,525.

[16] Statement made in annual report to stockholders for 1929 says that $1,142,702.01 of the net loss of $1,189,075.23 for the year 1929 represented the reduction of securities owned to the lower cost or market value.

[17] The three aviation companies included at this time were Bendix Aviation Corp., United Aircraft and Transport Corp. and North American Aviation Corp.

The Aviation Securities Corporation of New England and the National Aviation Corporation, however, experienced consistent reverses in their percentages of net income to net worth. During the three-year period (1928–1930) the latter's net income percentage fell from 8.7 to a deficit of 17.3. At December 31, 1928 this investment trust held aviation securities whose market values were approximately $4,428,550 against $2,926,698.03 on the books. By June, 1929 the approximate market value of its portfolio was $7,848,189.20 which was carried at $5,730,732.88, while by December the market value had dropped to $2,650,-493.48 against a cost of $5,266,099.58. In June, 1930 this relationship had become a market value of $4,176,553.34 to a cost of $5,383,273.30, and at the close of the year it stood at a market value of $2,558,628.31 to a cost of $5,554,336.95. By this time its portfolio policy had been changed to one including a diversified field, but heavy losses sustained during the period following October, 1929 caused the stockholders of this company to experience a decrease in equity relative to their original investments.

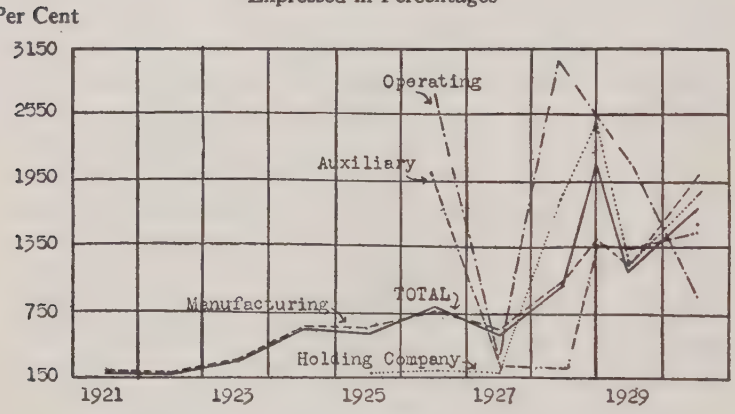
Heavy deficits sustained from aviation investments have caused this group to abandon its original purpose of promoting the industry through investment in aviation securities. Only a scattered new financing in aviation has been attempted during the past two years, and it would be a matter of opinion to state that were the industry to again inaugurate a period of new and increased public financing the aviation investment trusts would again turn to their assistance. While their major aid to the industry in acquiring funds was rendered when aviation securities were originally purchased by aviation investment trusts, it is also true that their continued demand for these securities would doubtless have strengthened market values somewhat. Furthermore, it would be unusual to see this group again act as an agency in the acquisition of more funds unless the investment trusts involved were reasonably certain of making adequate profits instead of being forced to suffer heavy losses.

2. *Funds Supplied by Owned and Borrowed Capital*

A second financial policy followed by the industry in the acquisition of capital funds is concerned with the degree to which

owned capital has composed the funds employed. This policy is best indicated by the movements of the relationship between net worth and total debt as set forth in the following chart. It is quite clear from the general movements of these relationships

CHART No. IV
GROUP RATIOS COMPARED WITH TOTAL
Net Worth to Total Debt
Expressed in Percentages



Source: Compiled from Appendix.

that as the industry has grown older, total debt has tended to decrease in terms of net worth. Especially has this been true during the last four years of the decade, as is shown by the pronounced upward trends of all branches except the operating group. A closer examination of the individual group movements should lead to a better understanding of what the general policy for the whole industry has been.

Policies Revealed by the Relationship of Owned to Borrowed Capital in the Manufacturing Branch of the Industry.—The most striking condition suggested by the movement of the proportion between the net worth and total debt of the manufacturing group set forth in Chart No. IV is the wide fluctuation between the 1921–1922 level and that reached toward the end of the period. The cause of this movement can be explained in one of several ways. In the first place, it might have been possible for the

tardy entry of several rather important producers to have distorted the total group relationship between net worth and total debt, thus causing an abnormal increase in the ratio during the three years between 1928 and 1930. Again, this movement may have been due to an actual change in the financial policies of the companies concerned. In such an event this change must be interpreted in the light of existing conditions. Finally, it is possible that this change could have been produced by a combination of these factors. Further inquiry should reveal the true

TABLE IV

MANUFACTURING GROUP RATIOS

Net Worth to Total Debt*

Expressed in Percentages

COMPANY	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
TOTAL GROUP	204	154	279	603	587	792	568	964	1413	1156	2120
Bellanca Aircraft	..	..	..	..	..	..	..	1322	1542	837	915
Consolidated Air	..	..	..	..	..	..	..	2114	1828	518	4523
Curtiss Aero. and Motor	116	264	124	283	295	445	478	1140	1666	221	724
Curtiss-Reid	..	..	..	..	..	..	..	6848	..	1202	3484
Douglas	73	..	168	426	139	323	724	980	..	1698	1499
Fokker-General	..	..	..	..	..	..	1036	437	1870	3792	10565
Great Lakes	..	..	..	..	..	..	..	19112	..	357	562
Keystone	..	..	..	..	..	242	134	798	3050	..	...
Kinner A. & M.	..	..	..	..	..	..	..	...	472	1705	581
Stinson	..	..	..	..	..	1300	730	1324	..	1022	1721
Waco	..	..	..	..	..	..	..	1362	..	1478	1711
Warner	..	..	..	..	..	..	..	1184	..	861	4694
Wright	1284	87	2838	4703	3338	7994	1235	9336	4612	2572	157

* Compiled from Manufacturing Group data, Appendix S, p. 197. It has not been practical to carry the individual balance sheet statements in the appendices.

cause of this variation. During the first five years of this period the margin of net worth gradually strengthened over total debt, since with but the exception of one year the financial activities of the three companies making up the group were quite regular. In 1921 the Curtiss Aeroplane and Motor Company terminated the policy of obtaining capital through funded debt and mortgages pursued during the war period, and also retired all mort-

gages then outstanding by the complete dissipation of its surplus account and the sustenance of an actual deficit. The Douglas Company, at the opening of the decade, was newly organized, and the margin of net worth it maintained over total debt during its early days reflects the experience of its youthfulness. This company did not secure capital funds from outside sources until the formation of the Douglas Aircraft Company, Inc., in 1928.

The cause of the unusual decline in the margin of net worth over total debt of the Wright Aeronautical Corporation in 1922 was the result of an obligation of $3,399,786 in favor of the Wright-Martin Company representing payment for assets then being acquired.[18] While this company continued to increase its capital stock from time to time as necessity required,[19] it consistently followed the policy of not acquiring additional subsidiary companies,[20] and not expanding beyond the limits of the production of airplane engines and engine parts.[21] The effective-

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[18] The three items making up this amount were:

1. Book value of undistributed net assets of Wright-Martin Aircraft Corp. to be paid to Wright Aeronatutical Corp. as and when realized	$508,687.82
2. Accrued liabilities, Wright-Martin Airplane Corp. in suspense	99,742.19
3. Reserve for trust fund to care for actual or contingent liabilities of Wright-Martin Aircraft Corp.	2,791,356.08
	$3,399,786.09

[19] From date of organization until consolidation with Curtiss Aeroplane and Motor Company the Wright Company had outstanding the following capital stock:

	AUTHOR.—NO PAR	ISSUED
Oct. 9, 1919	250,000	224,390
May 15, 1923	.....	249,390
May 31, 1928	500,000	.....
Dec. 22, 1928	.....	299,975
April 8, 1929	1,500,000	.....
July 15, 1929	.....	599,856 5/15

[20] The company had only one subsidiary, the Wright Flying Company.

[21] Production of Wright Aeronautical Corp. by years, as follows:*

1921	235 engines	1925	365 engines
1922	250 engines	1926	366 engines
1923	182 engines	1927	624 engines
1924	182 engines	1928	1,644 engines

*Source: *New York Stock Exchange Listing Application, No. A-8594*, p. 1–2.

ness of these policies is partially demonstrated in the company's record of dividend payments.[22]

The unusual decline in the margin of net worth maintained over total debt in 1930 was doubtless due to a number of circumstances both external and internal. The Wright company suffered a heavy deficit during 1930 which wiped out its earned surplus and made inroad upon its net worth through the reduction of total capital and surplus. General market conditions caused sales of the company to drop to one-half of the 1929 figure. But the most important single factor explaining this sudden drop is the appearance of a deferred payable item to an affiliate company for the purchase of plant assets amounting to 29.4 per cent of the total liabilities for this year. This item was doubtless the outcome of intra-holding company financing through the Curtiss-Wright Corporation.

Returning to the more recent financial activities of the Curtiss Aeroplane and Motor Company, it will be noticed from Table No. IV that the margin of net worth over total debt more than doubled between 1927 and 1928.[23] This increase was caused by new financing when all preferred capital stock was retired, and common stock was exchanged in its place.[24] On October 1, 1928

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[22] Dividends paid by Wright Aeronautical Corporation:

YEAR	PER SHARE	TOTAL	YEAR	PER SHARE	TOTAL
1921	$0.50	$112,195	1925	$1.00	$249,390
1922	1.00	224,390	1926	1.00	247,846
1923	1.00	243,140	1927	1.00	247,665
1924	1.00	249,390	1928	2.00	539,666

Source: *New York Stock Exchange Listing Application, No. A-8594*, p. 1–2.

[23] The financial difficulties experienced by Curtiss Corp. from the Armistice up to the middle of 1923 finally led to the organization (May 12, 1923) of the Curtiss Aeroplane and Motor Co., Inc. The predecessor company was finally dissolved Nov. 2, 1923, the capitalization of the predecessor corporation reduced and certain parts of the inventory not needed in manufacturing operations were liquidated. (See *N. Y. Stock Exchange Listing Application No. A-7697*, p. 12.)

[24] The purpose of the additional issue of common stock, as set forth in the company's listing application to the N. Y. Stock Exchange, was to retire all preferred stock (25,231 shares) then outstanding. The company also was eager to start upon an expansion program, having acquired (Feb. 14, 1928) 15,000 shares of Curtiss-Robertson Airplane Mfg. Co. This latter company was incorporated Jan. 17, 1928 for the primary purpose of building and marketing commercial planes to be sold at moderate prices. (*N.Y. Stock Exchange Listing Application No. A-7951*, p. 2.)

the company again made application to the New York Stock Exchange for permission to increase its stock issue in order to "provide funds for the expansion and development of facilities of commercial planes and motors, to furnish additional working capital, and for other corporate purposes."[25] Thus by the end of 1928, 72,686⅔ additional shares of common stock had been issued, and a 6 per cent morgage held by the United States government in the amount of $522,000 had been retired.

This expansion policy did not end with December, 1928. Business revival was well under way, and demand for commercial planes increased phenomenally. Production of planes throughout the country had increased from 1,995 units in 1927 to 4,346 in 1928.[26] Air transportation was augmenting the demand for aircraft and engines,[27] and government appropriations and consumption had been keeping stride with commercial development throughout the country.[28] The Curtiss corporation was eager to obtain its share of this new business, and having found the security market anxious to absorb all new security flotations presented, joined hands with a former competitor, Wright Aeronautical Corporation, in the formation of the new Curtiss-Wright Corporation.

The beginning of the second half of the decade marked the inauguration of important financial and productive activities on the part of the Douglas Aircraft Company. In 1928 the first public issuance of securities ever participated in was undertaken when a total of 342,384 shares of no par capital stock were offered, the proceeds of 200,000 shares being used for the purchase of the assets of the predecessor Douglas Company (approximately $1,247,547). The remainder of 142,384 shares was issued for cash to be used for purposes of expansion made necessary by an increasing government demand for its planes.[29] The increased margin of net worth over total debt and other symbols of finan-

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[25] *N. Y. Stock Exchange, op. cit., No. A-8198*, p. 1 (Oct. 1, 1928).
[26] See Appendix I, p. 184.
[27] See Appendix N, p. 188.
[28] For army and navy consumption figures, see Appendix E, p. 182, and Appendices F and G, pp. 182; 183. For government appropriations, see p. 160.

cial strength have been made possible because of favorable and steady government contracts and a constant reinvestment of earnings as will be demonstrated presently.[30]

There are other producers that have had an important influence upon the movements of the relationship between owned and borrowed capital as Table No. IV indicates. Of particular significance are the cases of the old Fokker company(now the General Aviation Corporation) and its tie with General Motors

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[29] The following figures indicate the importance of govenment contracts to the company. From Jan. 1, 1921 to March 1, 1931 the company and its predecessors delivered a total of 814 airplanes and a great amount of spare parts (but no engines are manufactured). Of the airplanes produced:

635 were for the U. S. Army
78 were for the U. S. Navy
51 were for U. S. Post Office Dept.
1 was for the U. S. Coast Guard
20 were for Mexican Army
10 were for Chinese Army
4 were for Peruvian Navy
1 was for Norwegian Navy
14 were for civilian users

Output During Past Five Years

YEAR	NO. OF PLANES	VALUE OF PLANES	VALUE OF SPARES	TOTAL VALUE
1926	120	$1,511,865.90	$150,857.90	$1,662,723.80
1927	97	1,506,219.98	464,741.31	1,970,961.29
1928	97	1,427,339.80	436,162.41	1,863,502.21
1929	134	1,804,743.56	741,281.67	2,546,024.23
1930	188	2,779,695.20	130,899.49	4,088,594.69
1931	164	1,540,866.00	643,590.46	2,184,456.46* (approximately)

*Unfilled orders at May 31, 1931—$2,486,355.34.
Figures for 1931 are for six months only.
Source: *N. Y. Stock Exchange Application No. A-9796*, p. 2.

[30] See the percentage of surplus to net worth, p. 65. On the other hand, the company has been quite liberal in its dividend distributions as is indicated below:

Dividend Record

YEAR	TOTAL EARNINGS	PER SHARE	SHARES O/S DATE OF STATE.	DIVIDENDS AM'T	DIVIDENDS PER SHARE	SHARES O/S DATE OF DIVIDEND
1926	$375,869.97	$375.87	1,000	None	.....	.....
1927	356,026.77	356.03	1,000	$40,000	$40.00	1,000
1928	415,089.02	415.09	1,000	None	.....	.....
1929	403,363.79	1.19	338,692	None	.....	.....
1930	689,849.53	2.02	341,086	254,000	.75	338,667
				170,561	.50	341,123
1931*	368,000.00	1.07	342,384	256,768	.75	342,358

*Six months only. Source: *N. Y. Stock Exchange Listing Application No. A-9796*, p. 2.

Corporation;[31] Great Lakes Aircraft Corporation and its heavy losses suffered during the last period;[32] and the operations of the Stinson Aircraft Company.[33] However, space does not permit their analyses here, so they will be omitted to be introduced as occasion demands.

It will be recalled that the movement of the trend representing the manufacturing branch of the industry presented in Chart No. IV (also Table No. IV) has been generally upward, thus indicating an increase of net worth over total debt. The above analysis has shown this increase in the margin of owned over borrowed capital to have resulted principally from three activities being carried on within the industry: (1) the organization of new manufacturing companies, (2) the expansion of production capacities of old companies, and (3) the acquisition of subsidiaries and the formation of holding companies. This group activity appears to have reached its peak in June, 1929, and was augmented by the general credit situation prevalent throughout the nation at that time.

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[31] General Motors Corp. acquired virtual control of Fokker (name changed from Fokker Aircraft Corp. to General Aviation Corp. in 1930) in May, 1929 through the acquisition of 400,000 shares of common stock. This explains the source of the market for most of the new financing completed by June, 1929. It placed the company in a position to use the facilities extended by the General Motors Export Corp. and General Motors Acceptance Corp. However, the net loss from operations for 1930, before adjustments, was $731,657.94. (See President's statement to stockholders, 1930.)

[32] The total write-off of inventory, tools, jigs, fixtures for 1930 was $489,000.73. In addition a reserve of $175,000 for general contingencies was charged against the year's operations, making the total deficit, including loss from operations, $848,841.36. These reverses and financial difficulties experienced by the Great Lakes Aircraft Corp. undoubtedly prompted a change in financial policy, the announcement of which was made public after the close of the fiscal year, 1930. The change of policy here set forth was one of diversification. In order to use more intensively the complete manufacturing facilities of the factory, steps were taken to secure exclusive patents for important metal products used widely in the building industry. Furthermore the development of a stationary airplane used for training and amusement purposes was completed, thus enlarging the company's sources of business.

[33] Planes manufactured and sold by the Stinson Company are as follows:

1926 (June 15 to Dec. 31)	8
1927	34
1928	97
1929	120
1930 (6 months)	151

Source: *Standard Corporation Records, Standard Statistics* files at New York office.

In the second place, the group relationship between owned and borrowed capital has been weakened since June, 1929, even though the 1930 ratio does not indicate this condition. This decline has resulted largely from (1) additional inventory stocks and purchases resulting in increased borrowing and (2) large deficits suffered in 1929 and 1930 by many companies. Losses have been caused by a falling off of the industry's business due to consolidation of operating equipment of commercial lines and the general business depression which dampened the market for the group's product.

The question that arises from the analysis thus far, then, is one as to whether too much owned capital has been available to this branch of the industry. The answer must be sought in the light of other relationships which reflect financial policies relative to the origin of the capital employed to be presently considered. We may turn next to a consideration of the movements of the margin of net worth over total debt maintained within a second branch of the industry.

Capital Funds Supplied Commercial Air Operators by Owners and Lenders.—The operating branch included within the study is composed of four important commercial aviation operators, two of which are among the oldest in the country.[34] While it is unfortunate that more operators could not have been included, still the policies of practically all other important carriers exert their influence upon the policies developed in the analysis of the holding company group, for the consolidation movement has incorporated by far the major portion of other operating companies within the groups at present under inquiry.[35]

One policy followed by commercial aviation operators in the acquisition of capital funds is that involving whether such funds

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[34] National Air Transport, Inc. (Chicago-New York Mail service opened July 1, 1919 and Chicago-Dallas opened May 2, 1926) and Western Air Express Corp. (April 17, 1926).

[35] For example, such lines as Southern Air, Universal, Colonial, Interstate, Embry Riddle, Eastern Air, Boeing, Varney, and Pacific Air Transport are covered indirectly through the holding company analysis. While their policies are merged in with the policies of companies in other branches of the industry, and thereby those of the operating group itself are lost, still they exert an influence upon the holding company policies and indirectly upon the industry as a whole. (See organization list, p.175 for all operating companies included.)

have been secured from investors as owners, or whether they have been largely borrowed upon long and short-term accounts. This policy is best indicated by the movement of the line representing this branch's net worth to total debt relationship shown in Chart No. IV (page 42), and again set forth in detail in Table No. V. In 1926, the year which marked the inaugura-

TABLE V

OPERATING COMPANY GROUP RATIOS
Net Worth to Total Debt

Expressed in Percentages

COMPANY	1926	1927	1928	1929	1930
TOTAL GROUP	2740	433	3029	2046	907
National Air Transport	2852	260	1533	4956	1214
Pan-American Airways Corp.	....	....	3161	2357	474
Transcontinental Air Transport	....	....	a	1844	a
Western Air Express	2518	2092	1972	1300	735

Note: The symbol a as used throughout the data denotes the ratio was so large as to be useless for comparative purposes.

tion of commercial air transportation in this country through Post Office Department mail contracts, two companies had a combined net worth of $27.40 for each $1 of total debt. The margin of net worth over total debt for the following year, however, dropped precipitously to where the borrowed share of capital funds was only slightly over four times that of borrowings. The date presented in Chart No. IV, and in Table No. V show that the margin of owned over borrowed capital increased considerably by the end of 1928, and then declined throughout the remaining two periods.

When a new enterprise is inaugurating activities within an industry, it is natural that newly acquired funds from the sale of stock certificates with no accompanying sale of bonds should create a large margin of owned over borrowed capital. This condition prevailed among the two enterprises included in 1926. But the current liabilities of National Air Transport, which in 1926 composed only 2.9 per cent of total liabilities, increased by

the end of 1927 through a notes payable item, causing current liabilities to represent 23.8 per cent of total liabilities at the close of this period. The company had been required to deposit bonds with the government in order to become a mail carrier, and thus had been forced to secure necessary additional funds through short-term credits.

By the following year, however, these notes payable by National Air Transport were retired, all developmental and experimental costs were written-off, and the deficit incurred during the first year of operation was materially decreased. Again, capital stock which had been slightly increased from 1926 to 1927 was now more than doubled to provide for increased expansion. The following year (1929) witnessed another addition to capital stock anticipatory to its consolidation with United Aircraft and Transport Corporation (actually consumated in 1930). These increased stock issuances, together with a decline of current liabilities during 1929 (at that time representing a minimum of only 1.7 per cent of total liabilities) and the appearance of a surplus item, are reflected in the increase of net worth over total debt. While an increase in current liabilities for 1920 caused a drop in this relationship, this item (current liabilities) at the close of the period represented but 7.6 per cent of the company's total liabilities which again was caused by increased short-term borrowings.

Two newly organized operators, Pan-American Airways Corporation and Transcontinental Air Transport, Inc., entered into heavy financing activities during 1928 for the purposes of acquisition of new properties and subsidiary companies. With Pan-American Airways Corporation (then known as Aviation Corporation of the Americas) funds secured from the sale of stock were used mainly in the acquisition of subsidiary companies, and in the extension of activities. With Transcontinental Air Transport, Inc., development plans and the selection of routes demanded considerable time, and at the close of 1928, 93 per cent of all assets had been placed in cash, call loans, and marketable securities awaiting necessary investments.[36] An increase in capital

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[36] Net worth of T. A. T. was $3,250,798 against total debt of $388 in 1928, and $5,930,472 against total debt of $10,473 in 1930.

stock was undertaken in 1929, thus tending to increase further the margin of owned over borrowed capital.

The fourth company included within this branch of the industry is that of the Western Air Express Corporation.[37] While the margin of net worth over total debt maintained had been declining, it still approximated the level of the group at the end of 1930. The principal factor leading to this decline has been a steady increase in current debt brought on by increased activity, together with reduced government mail contracts and increased competition in both coastal and transcontinental routes.[38] Investments in building and equipment expanded almost fourfold between 1928 and 1929 when the company expended large amounts upon terminal facilities in Los Angeles which were later abandoned through consolidation with Transcontinental Air Transport, Inc.[39]

While this branch of the industry has hardly been in existence long enough to have developed clear cut financial policies, discernible by means of such an analysis, it is evident that indorsement by public opinion and easy credit conditions made for a rapid acquisition of capital funds thus affording expansion to meet the growing demand for commercial aviation. Once organized, developmental expenses proved to be heavy, and con-

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[37] An indication of the importance of this company in the field of commercial aviation is suggested by the following operating statistics:

	MAIL POUND.	PASS. TRAFFIC	MAIL REVENUE	TOTAL REVENUE	NET EARNING
1926	71,414	209	$199,778	$212,547	$1,029
1927	203,547	400	611,719	637,252	306,974
1928	385,534	6,794	1,208,866	1,386,701	721,272
1929	757,685	25,013	2,354,985	2,950,922	963,618
1930	856,757	.....	1,623,415	2,543,602	−216,997

Dividend Record

Western Air Express, Inc. paid regular quarterly dividends of 2 per cent in cash from September 15, 1927 to December 31, 1928.

Western Air Express Corp. paid regular quarterly dividends of 15 cents per share from May 1, 1929 to date (or to April 31, 1931).

[38] On the company's most important mail route (Salt Lake City to San Diego) the government contract rate was reduced from an average of $3.17 per mile in 1929 to $1.71 in 1930.

[39] From a total of $515,060.49 in 1929 to $1,915,363.27 in 1929. Alhambra terminal facilities were abandoned in 1930.

solidations soon to follow, while calling for an increased capital structure, also led to heavy write-offs made necessary because of duplicated equipment and operations. These factors combined throughout the last two years to diminish the relative position between owned and borrowed capital within the brach.

Margin of Owned Over Borrowed Capital Maintained Among Auxiliary Companies.—The policy of maintaining a high margin of owned over borrowed capital has been followed by the auxiliary group. It will be noticed from Table No. VI that the group ratio appears high, drops to a comparatively low figure during the

TABLE VI

AUXILIARY GROUP RATIOS

Net Worth to Total Debt

Expressed as Percentages

COMPANY	1926	1927	1928	J.29	1929	1930
AUXILIARY GROUP	2111	371	357	1365	1345	1547
Aero Supply Mfg. Co.....	2111	1761	776	....	2273	5528
Bendix Aviation Corp.....	....	275	130	1202	1251	747
Central Airport, Inc.....	....	.....	....	....	46154	36738
Curtiss Aeroplane Export....	....	37401	1443	584	85	1.4
Curtiss Airports.....	....	.....	....	....	1218	453
Curtiss Flying Service.....	....	.....	4880	1331	294	208
Irving Air Chute.....	....	.....	532	....	2861	1195
Roosevelt Field.....	....	.....	....	7658	2758	6593

two years 1927 and 1928, then rises for the following three periods. The distinguishing feature between this movement and the movements of the other group ratios is the comparative degree of stability indicated in the relationships under consideration (except for the first year's drop), and its strengthening rather than weakening trend during the 1929 period. (Observe Chart No. IV, page 42).

When the Curtiss companies (involving duplications upon their acquisition by Curtiss-Wright Corporation) are dropped, the ratios follow closely the movements of those representing Bendix Aviation Corporation, with the exception of the final period, December, 1930. This, then, is the company having

the strongest single influence over the group total, until the final period. An inspection of the balance sheets discloses the fact that on December 31, 1930 the total assets of Bendix Aviation Corporation represented 59 per cent of the total assets of all companies within the group combined.[40] The increase in importance of four other companies during the final period explains the apparent loss of influence held by the Bendix company over the group total. In the interpretation of this movement, therefore, it becomes necessary to lay most emphasis upon the financial policies followed by this enterprise.

The Bendix Aviation Corporation was not organized until April 13, 1929, and the influence of the issuance of new capital is suggested by the increase of the relationship of owned over borrowed capital taking place at this time. During 1927 and 1928 the margin of net worth to total borrowings of its predecessor, the Bendix Corporation, was unusually low. At this time, however, the predecessor company was small and relatively unimportant.[41] The 1928 decline in the margin was occasioned by a large increase in current debt, this item having risen from 11.8 per cent of total liabilities in 1927 to 19.7 per cent in 1928.

It is significant, however, that the primary business of the new Bendix Aviation Corporation was that of the "manufacture and sale of an extensive line of motor vehicle, tractor, aircraft and marine craft parts and accessories."[42] Included in the new corporation were to be found on December 31, 1930 a total of twenty-three subsidiary companies covering these diversified fields of interest.[43] Upon its Board of Directors for 1930 appeared the names of four men prominent in the aviation industry, and two who were officers of General Motors Corporation.[44]

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[40] Total assets as at December 31, 1930:

Bendix Aviation Corp.	$65,867,464.98
Total group—8 companies	110,420,398.41
Group—less dup.—5 companies	74,853,950.10

[41] Total assets as at December 31:

1927	$6,747,368.83
1928	16,982,653.06

[42] *New York Stock Exchange Listing Application, No. A-8688*, p. .

[43] See list illustrating companies included in this study, p. 175.

[44] General Motors is a heavy stockholder of Bendix Aviation Corp.

While a detailed and exhaustive analysis of this company should be undertaken to discover the causes of policies followed relative to the company's source of capital, such a study is outside the scope of this inquiry. We are forced then to state the general policy that is obvious from these shifting relationships in the light of the discussion thus far. The Bendix company has continued to secure a large part of its capital from stock issuances rather than from borrowings. The proportion between owned and borrowed capital has remained fairly constant since the incorporation of the parent company, slightly increasing in opposition to the natural influence of continual acquisition of subsidiary companies. The cause of this steadiness appears to be in the company's adherence to a stringent policy of diversification of interests, embracing not only the aviation accessory field, but also the automotive and marine where many patents and royalties have increased earnings and have encouraged a continuance of this policy.

The only companies bearing individual analysis that do not seem to corroborate the above interpretations are those of the Curtiss-Wright group. In the case of the Curtiss Aeroplane Export Corporation two important factors have caused the constant decline of net worth under total debt to the surprising low of 1.4 per cent at December, 1930. One of these has been an item on the balance sheet evaluating the contract with Curtiss Aeroplane and Motor Company, Inc., covering in general the exclusive rights to sell that company's products in foreign markets. This amounted to $1,000,000 until December, 1930, when an amortization of $281,124.04 was deducted, leaving a balance of $718,875.96. In computing the company's net worth, however, this item was deducted as was done with all similar items appearing on the balance sheets of other companies.

The other factor which has accentuated the precipitous decline in the relationship between owned and borrowed capital has been the increasing deficit reducing the net worth of the company. By December, 1930, this deficit was equivalent to 37 per cent of the total liabilities. If taken with the evaluation of the franchise held by the company December 31, 1930, this item lacked only $14,778.28 of equaling the total capital and surplus

of the enterprise for this year. The owners, therefore, according to this computation, held but 1.4 per cent equity in their original investment. The constantly mounting deficit would seem to substantiate the assumption that the foreign sales franchise is at present practically worthless. However, the acquisition of this company by the Curtiss-Wright holding company keeps it from influencing conclusions drawn for the entire group to any appreciable extent, for it was dropped from this compilation in June, 1929.

The Curtiss Airports Corporation is another Curtiss company whose policy regarding the maintenance of a high margin of net worth over total debt runs contrary to that for the group. Two accounts appear to have decreased this margin. One has been a heavy deficit which in 1930 was equivalent to 8.6 per cent of the total liabilities; the other was an account payable item carried in 1930 because of the acquisition of subsidiary companies. This latter item accounted for 13.5 per cent of the total liabilities for this period, and involves another case of inter-company debt activities.

The Curtiss Flying Service is the third and final of the Curtiss group having evidently initiated activities leading to a decreased capital supply secured from owners. It is interesting to note that in the preceding two companies one of the contributing factors leading to a decrease in owned over borrowed capital has been the appearance of a heavy deficit. It is also significant that both of the above companies are specialties, with practically no diversification.[45] These qualities are also applicable to the Curtiss Flying Service. The principal cause for the relative decrease in net worth and increase in total debt has been a decrease in earnings resulting in heavy deficits in the years 1929 and 1930. In 1930 this deficit was 107 per cent of the total liabilities, or 88 per cent of the total capital and surplus.[46]

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[45] Curtiss-Wright Airports Corp. operates a chain of commercial airports throughout the country; Curtiss-Wright Export Corp. sells products in foreign fields; and Curtiss-Wright Flying Service, Inc. operates training and service stations.

[46] Total liabilities as at Dec., 1930 were $6,527,756.32, while total capital and surplus was $7,922,880.54, and surplus deficit was $6,951,527.71. This condition has finally led to the curtailment of many of the company's operations, in the hope of being able to acquire diversification in other branches.

The comparatively steady increase in the proportion owned capital occupies over borrowed in the financial structure of the auxiliary group throughout the past three years has resulted from one or two influences. First, increased capitalization of the group during this period may have led to an increase in this relationship. Again, reduced costs, operating economies, and increased earnings may have made possible the ploughing back of a greater percentage of earnings, or the retirement of a relatively large amount of current and total debt. Either or both of these two policies would have strengthened the margin between owned and borrowed capital. Further analyses soon to be presented may shed more light upon which of these policies seems to have been followed.

Proportion of Owned and Borrowed Capital Maintained by Holding Companies.—While there appears no unusual condition existing within the financial structure of the two early entrants to the holding company field as judged by the figures presented in Table No. VII, a sharp increase in the margin between net worth over total debt took place in 1928. The development of this branch of the industry has already been suggested in the introductory chapter, and the entrance of three new holding companies into the field in 1928 is clearly indicated by the disturbance of the previous capital proportions. Although the Fairchild Aviation Corporation had carried on an aerial camera busi-

TABLE VII

HOLDING COMPANY GROUP RATIOS
Net Worth To Total Debt
Expressed as Percentages

COMPANY	1925	1926	1927	1928	J.29	1929	1930
HOLDING CO. GROUP	186	284	214	1744	2393	1163	1700
Alexander, Ind.	186	284	168	259	.....	203	487
Aviation Corp.	...	...	...	.....	15983	1835	3268
Curtiss Wright	...	...	...	.....	1706	575	897
Detroit Aircraft	...	...	...	.....	3162	1107	.....
Fairchild Aviation	...	...	242	1680	1521	599	1599
North American	...	...	...	49960	68179	58665	22195
United Aircraft and Transports	...	...	...	995	957	1591	2234

ness for several years prior to 1928,[47] it was not until this latter date that the holding company's margin between net worth and total debt became conspicuous. This was caused primarily by a large increase in net worth through the issuance of additional capital stock. Thereafter, with the exception of 1929, this ratio held a stable position. The drop in 1929 resulted in a notes payable item accounting for 9.3 per cent of the total liabilities suddenly appearing upon the balance sheet.[48]

North American Aviation was a second company which affected the group's margin of net worth over debt first in 1928. The relationship appears abnormally high principally because the company kept a large portion of its current assets in the form of marketable securities. When this company was first organized it was perhaps more of the nature of an aviation investment trust than a holding company, but more recently it has acquired subsidiaries in several lines of aviation activities (see Organization List, page 175). Its security holdings, however, are still extensive. On December, 31, 1928, 26.5 per cent of total assets were composed of investments in securities; at the end of 1929, 54 per cent were so composed; and at the end of 1930, 50.4 per cent were thus made up.[49]

A final company whose financial activities affected those of the group in 1928 was that of the United Aircraft and Transport Corporation.[50] While its proportion of owned to borrowed capital for this period was lower than that for the group, the trend throughout succeeding years was upward, and the margin indicates the effect of increased capitalization coupled with a steadiness obtained in the amount of debts incurred. The corporation controls a number of well established companies with activities in the production, auxiliary, operating and other diversified

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[47] The Fairchild Aerial Camera Corp. was organized in 1920.

[48] This notes payable item was secured by 100,000 shares out of the 210,000 shares of The Aviation Corp. stock then owned by the company. Until Jan. 12, 1931 this company was controlled by The Aviation Corp.

[49] These percentages were based upon cost. Open market securities owned at December 31, 1929, representing a cost of $14,688,998.13, had a market value of $6,813,040.27.

[50] Former name was Boeing Airplane and Transport Corp. (organized Oct. 31, 1928).

fields of the industry,[51] and its demonstrated earning power, together with the ease at which capital flotations have been made, have maintained the Net Worth to Total Debt margin for the past two years above the average.

Three new holding companies entered the group by June, 1929. The Aviation Corporation on August 2, 1929 issued 3,032,410 shares of no par common stock.[52] The balance statement as at June 30, 1929 showed that $23,170,725 or 42.5 per cent of all assets were outstanding on the call loan market. Current liabilities at this same period amounted to only .6 per cent of total liabilities. These circumstances combined to produce the high ratio of $159.83 of net worth for each $1 of total debt indicated in Table No. VII.

The Aviation Corporation soon began to incorporate within its structure a large number of subsidiary companies, and by December, 1929 total debt had increased considerably, and net worth had decreased. Net worth alone shrank almost $20,000,000 or 36 per cent from the time of the publication of the June, 1929 statement to that of December, 1929.

An inquiry into the cause of this abnormal shrinkage indicates that after the acquisition of a large number of operating properties[53] (which doubtless had been acquired through exchange of stock before the stock market crash), a revaluation of these newly acquired properties resulted in the deflated figures which then appeared. Whether this evaluation was based upon an actual appraisal at the time the operating companies were acquired during the year,[54] or whether the shrinkage represented proper allowances for depreciation of physical assets and write-offs of intangibles cannot definitely be determined. However, a check

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[51] See Organization List, p. 175.

[52] Corporation had outstanding on Dec. 31, 1930, 240,000 shares of 7 per cent preferred stock, $50.00 par; 2,083,223 shares no par common stock, carried at $20,936,444.48.

[53] For a complete list of the corporation's subsidiaries, see Organization List, p. 175.

[54] The June, 1929 statement showed only two wholly owned subsidiaries as of this date: The New York Aviation Corp. and the Aviation Patent and Research Corp. All other interests were carried as investments in marketable securities. The corporation, however, holds controlling stock in all those subsidiaries listed in the chart.

through the subsidiary companies acquired reveals that heavy organization and developmental expenses carried on the individual balance sheets of many subsidiary companies were dropped when the acquisition was completed. Furthermore, the new Aviation Corporation followed the policy of a complete write-off of intangibles. These circumstances, then, strongly indicate the causes of this decrease in net worth. It is interesting to note the difference between the results of the application of the policy of centering interests within the operating group as followed by Aviation Corporation, and the results of the policy of diversification as followed by North American Aviation Corporation and United Aircraft and Transport Corporation. Further inquiry into such phases of financial performance as earnings and dividend payments should aid in passing judgment upon the value of such diversification programs.

Curtiss-Wright Corporation is another enterprise which entered the holding company field in 1929. The most important companies included in its list of subsidiaries are the Curtiss Aeroplane and Motor Corporation and the Wright Aeronautical Corporation which have been analyzed in the chapter dealing with the manufacturing branch of the industry. Since these two well established companies formed the nucleus of the Curtiss-Wright group (whose major interest lies in the production branch of the industry), it is not surprising to find the early proportions between net worth and total debt relatively low. High amounts of current liabilities incurred in the main by the operations of subsidiary companies caused the margin to sink lower in 1929, with a slight rise by the end of 1930.

There are many circumstances to consider in attempting to evaluate this trend. Operations of certain subsidiary companies proved to be very costly, as was suggested in the preceding analysis of subordinate companies. Furthermore, the Curtiss-Wright directors had adopted a stringent policy of intangible write-offs, consolidation of manufacturing and operating units and the establishment of contingency funds to offset depreciated value of properties. Whether such changes in its balance sheet will lead to a strengthening of its financial structure can be detected in the course of time.

Lack of sufficient data prohibits an analysis of the Detroit Aircraft Corporation. It has been included in the general holding company group because of the important position its subsidiary holdings maintain within the industry.

Summary and Conclusions.—The inquiry thus far has revealed the part that banking and brokerage institutions and aviation investment trusts have had both as financial agencies in directing funds from the public into the industry, and also as direct sources for these funds within themselves. While their respective parts as a direct source of funds has not been impressive, still they have proven to be powerful agencies in directing this new capital flow, and have wielded a strong influence in the building of the industry's capital structure and the forming of important financial policies. Their primary function, then, in the acquisition of capital funds has been that of an agency in bringing the aviation industry in touch with the investor, and the investor with the several branches of the industry.

The importance of this service in the acquisition of capital funds has been emphasized by the second major discovery thus far revealed. In each branch there has been a marked increase in the proportion between capital funds furnished through the purchase of stock (or reinvested earnings presently to be considered) and that secured on long or short-term credits. This margin of owned over borrowed capital reached its highest point during the early months of 1929, coincident with the period of aviation expansion and consolidation, and feverish stock market speculation, but still shows a marked increase over the proportion maintained between these two external sources of capital during the first half of the decade. The industry's policy has thus been one of obtaining a great share of its outside capital through stock issuances made possible largely through the services of financial institutions, and by a market eager to absorb new security issues.

CHAPTER III

Other Policies in the Acquisition of Funds Affecting the Capital Structure of the Industry

The preceding chapter has developed the aviation industry's financial policies in the acquisition of capital funds from sources and through agencies outside of the industry itself. There is, however, a source of funds arising from within the industry which remains to be developed. While it has been discovered that by far the greater share of capital obtained from the market has been secured through the public offering of stock certificates (and issuance directly to stockholders) rather than through long and short-term credits, still the average business enterprise is usually successful in ploughing back surplus earnings which serve to supplement these other sources and so to enlarge the supply. It is true that these surplus earnings are actually contributed by the owners of the enterprise (for they forego the receipt of a share of profits as dividends in order that these surplus earnings may be directed back into the business). But it is equally true that such earnings redirected into the capital fund through the surplus account are of a different nature from the funds secured directly from outside sources, for they have been produced within the industry, and when reinvested they remain within the industry. The size of such a source of supply, therefore, depends wholly upon the degree of success to which financial operations are carried on and earnings are produced.

There is furthermore an important characteristic of an external source of funds to be examined. Analysis thus far has shown that the industry obtains but a small amount of funds through borrowings. What has been the nature of these-borrowings? Has the industry maintained a consistent policy of obtaining all or most of its borrowed funds upon short-term accounts? If most borrowings be found to have been secured through short-term rather than through long-term credits, why has such a course been followed, and what have been the financial implications?

There is a sense in which a consideration of reinvested earnings

demands an accompanying treatment of dividend and stock issue policies, but it has seemed advisable to postpone their development until the inquiry has further revealed the financial policies concerning its earning power. While the earned surplus account also depends wholly upon income, its influence upon financial policies is felt primarily as a factor affecting the source and nature of capital, and is accordingly thrown into the analysis at this point. It is, therefore, the aim of the present chapter (1) to measure the amount of capital the industry has obtained through these reinvested earnings, and (2) to disclose the relationship between the supply of borrowed capital contributed from long-term and short-term credits. With this analysis will be developed the policies which these conditions show have been followed.

1. *Capital Funds Acquired Through Reinvested Profits*

Earnings reinvested within the several branches of the aviation industry have been greatly influenced by both internal and external forces. This changing importance of surplus as a second source of capital funds contributed by owners in the industry has followed closely the degree to which profits have been earned or actual operating deficits sustained, for only occasionally has the surplus account been diminished by a policy calling for the payment of dividends when earnings have not warranted such action.[1]

The gradual increase in the relationship between surplus and net worth (Chart No. V) to the end of 1925 demonstrates the successful operation of manufacturing units. Increased market activities described in the introductory chapter were experienced first during 1926 and 1927 with gratifying results for a while, but soon the increased competition encouraged by both present and prospective financial gains, and high organization costs began to decrease profits and deplete surplus. The trend in the percentage of surplus to net worth reached its peak when two-thirds of the 1921–1930 period was passed. From that time on, it continued a steady downward movement.

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[1] See full discussion of dividend and stock issue policies, Ch. VI, p. 142.

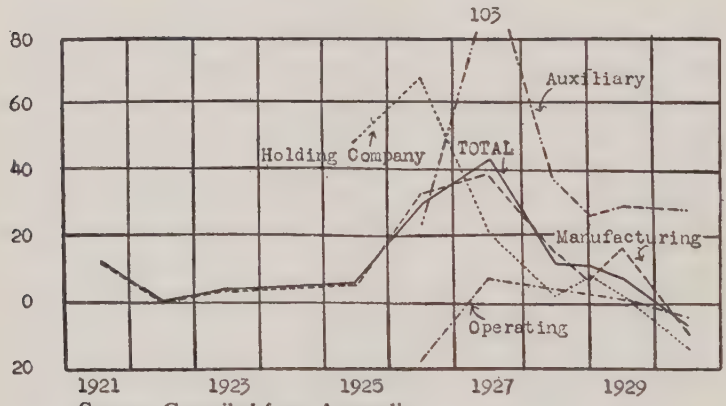
Reinvested Earnings Within the Manufacturing Branch.—After the business depression experienced at the opening of the decade had past, and necessary post war adjustments within the industry had been made, the manufacturers of aircraft and parts entered a period of increasing profits which permitted a gradual strengthening of the earned surplus account for several consecutive years. Not only did this source contribute more to the capital supply in terms of dollars, but it became a relatively more important source of capital.

CHART No. V

GROUP RATIOS COMPARED WITH TOTAL

Surplus to Net Worth

Expressed in Percentages



Source: Compiled from Appendix

Because of conditions presently to be reviewed, surplus in 1922 made up no part of net worth. In the following three years, however, the producers were able to regain surplus accounts, and thus contributed a small part of their earnings to the total supply of capital. By 1926 the post war financial readjustments had been fairly well completed and surplus war supplies were greatly diminished. Moreover, the demand for aircraft and parts was being augmented principally by an army and navy building program, and by the inauguration of air mail service.

TABLE VIII

MANUFACTURING GROUP RATIOS

Surplus to Net Worth

Expressed in Percentages

COMPANY	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
Total Group	12.6	0	4.8	5	5	32	39	15	7.5	16	—7.1
Bellanca Air	.....	.....	.....	.....	.....	.....	.....	0	—.1	−6	−29.7
Consolidated	.....	.....	.....	.....	.....	.....	.....	0	0	102	114
Curtiss	−31	−18	10	9	9	16	30	9	17	10	1
Curtiss-Reid	.....	.....	.....	.....	.....	.....	.....	0	.....	−9	−93
Douglas	−103	.....	39	41	53	83	88	0	.....	13	20
Fokker-Gen	.....	.....	.....	.....	.....	.....	0	0	4	4	2
Great Lakes	.....	.....	.....	.....	.....	.....	.....	0	.....	0	−128
Keystone	.....	.....	.....	.....	.....	.....	.....	2	5	.....	.....
Kinner	.....	.....	.....	.....	.....	.....	.....	.....	.9	1	0
Stinson	.....	.....	.....	.....	.....	8.3	7.4	28	.....	30	27
Waco	.....	.....	.....	.....	.....	.....	.....	57	.....	44	31
Warner	.....	.....	.....	.....	.....	.....	.....	−4.6	.....	−7	−18
Wright	26	19*	18*	20*	20.4*	41	48	38	31	25	−17

* See note 20, p. 75.

As a result of these favorable circumstances, greater earnings permitted a greater contribution of surplus to the capital supply.

By 1929 the percentage that surplus bore to net worth had increased to 39, but the following year (1928) marked the entrance of seven new producers into the field, and the group's reinvested earnings became less than half as important a part of capital as they had been in the previous year. It is significant that at this time the surplus percentage of every company previously included in the study, with but one exception,[2] either declined or appeared as zero. Since only half the companies made available income accounts for June, 1929 this period must be omitted for the present. While by the end of the year (1929) the position of surplus had changed but slightly over that for the previous December, by the end of the decade this account had been entirely absorbed and a deficit equivalent to over 7 per cent of net worth had made its appearance. What were the underlying financial activities that caused such a variation in the amount of owner's capital supplied through reinvested earnings? The answer can be found only by examining the major financial activities affecting the earnings of the enterprises that compose this branch of the industry.

Increased operating losses of the Bellanca Aircraft Corporation have been the direct result of a constant rise in deficit and the subsequent decrease in net worth. This increase in the annual deficit has taken place in opposition to a steadily rising volume of sales. Such a condition would indicate that the trouble is to be found not in its market condition (unless increased volume has been obtained by means of a decreased per unit profit), but rather in the shifting relationship of the individual items of the financial statements. This change has been due in part to heavy developmental costs, and in part to large inventory purchases which doubtless were carried over during the past two years to be sold at sacrifices because of weak market conditions and of obsoles-

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[2] Stinson Aircraft Corporation.

cence.[3] Other factors influencing this surplus account will be developed later.

The case of Consolidated Aircraft seems quite abnormal since the surplus is only shown appearing in the years 1929 and 1930, and is equal to 102 and 114 per cent of the net worth for the two years respectively (obviously an impossible situation). This would indicate that the surplus account at that time actually contributed more than the net worth. The implication is two-fold. Either debts borne at the close of this period had cut heavily into the net worth of the company, or an unusually favorable business volume made possible the establishment and the increase of this fund.

A close inspection of the balance sheet items, however, reveals that neither of the above deductions needs to have been the case. Sales volume actually fell somewhat below that for 1928 during 1929,[4] but the 1929 net worth of the company was almost twice as high as that of the previous year, and the 1930 figure was still 1.68 times that of 1928. In order for this increase to have permitted a further upward movement in the Surplus to Net Worth ratio, a drastic change in the surplus item would have been necessary.

It is in the surplus item that the difficulty is to be discovered. Under the method of tracing the data explained in Chapter I, all items of surplus accounts other than earned appearing on the balance sheets have been classified as capital surplus. In the case of Consolidated Aircraft this arbitrary classification perhaps has worked an injustice, for there appear two surplus items in December, 1929 and 1930, but only the capital surplus item

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[3] A comparison of the proportion of approvals of standard types of airplanes for 1929 and 1930 shows a decrease in biplanes, and a corresponding increase in monoplanes. The approvals of open biplanes for 1930 were about 38 per cent of the total approvals, approximately 5 per cent under the same type in 1929. Approvals for closed monoplanes, on the other hand, increased 10 per cent in 1930 over those for 1929, while open monoplanes remained practically unchanged at about 13 per cent of the total of approved types. Closed biplanes, the smallest percentage group of approvals, dropped in 1930 to 2 per cent, about 7 per cent under that of the preceding year. These figures indicate a shift in demand to monoplanes, which has had a large influence upon the inventory item of all producing companies. (See *Aviation Magazine*, Jan., 1931, p. 24.)

[4] 1928 net sales equaled $3,142,925.52; 1929 net sales equaled $2,619,445.09.

was carried on the balance statements previous to this time. Therefore, one of two policies has been followed. Prior to 1929 the company may not have received earned surplus. It is likely, however, that the company had classified all surplus as capital surplus and thus the classification herein followed meets a problem with which it cannot reckon. If the latter case be true, partial justification can be gained on the grounds that the company under consideration is relatively unimportant when compared to the total group, and therefore the analysis has not been changed appreciably.[5]

Curtiss Aeroplane and Motor Company, Inc., as was suggested in the preceding analysis, has played an important part in the financial performance of the industry. Its surplus account is shown to have been heavily burdened during 1921 and 1922 when it appeared as deficits composing 31 per cent and 18 per cent of total net worth respectively. Such a deficit seems somewhat less serious when it is recalled that the net worth item during the first year particularly was considerably lower than normal because of the cancellation of funded debt and the assumption of mortgages payable. It was because of this shift in financial structure that the surplus account was completely wiped out and a deficit sustained.[6] In the light of these activities, therefore, the decrease in 1922 to an 18 per cent deficit marks an improvement in its financial position. Through the years 1923 to 1925 a surplus account was established which contributed about 10 per cent of net worth. While the company in the previous two years had obtained all capital through borrowed and owned funds, it began in these years to supply a portion of its capital through reinvested earnings.

For the following two years the surplus account increased rapidly, reaching the peak in 1927 when the equivalent of 30 per cent of net worth had resulted from reinvested earnings, The year 1928 witnessed a decrease in this account to 9 per cent. which although lower, was similar in movement to the group as

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[5] This company has an unusually impressive dividend record, and there can be but little doubt that its earned surplus account has been large. See discussion of its dividend policy, Chapter VI, p. 142.

[6] See discussion under this same company on p. 43.

a whole. While the June, 1929 surplus increased to 17 per cent of net worth, the December statement proved that this increased surplus at midyear was largely anticipatory only, for heavy inventory stocks and decreased sales had cut into the company's earnings by the end of the year. Net profits on sales had decreased from $1,749,642.23 in 1928 to only $684,856.22 in 1929. In 1930 this ratio was further decreased, leaving but 10 per cent of the total net worth to be made up of surplus. The balance sheet for this period reveals that extraordinary deductions were made, some of which account for the small showing of net profit, and others of which made allowances and large provisions for contingencies ($1,050,000 for 1930), and a write-off of goodwill ($400,000 for 1930).[7] Thus by the end of the decade only one per cent of the net worth of the company was being contributed through the surplus account.[8]

The Curtiss-Reid Aircraft Co., Ltd. was organized in 1928 and by December, 1929 the balance sheet showed a deficit of $133,322.40 or 9 per cent of the net worth. This deficit increased to $779,306.07 or 93 per cent of the net worth by December, 1930, and illustrates the struggle experienced by many of the younger enterprises within the industry. A search for the cause of these heavy losses discloses two possible explanations, both of which are quite characteristic of the industry. One is found in the fact that unusually heavy developmental and organization expenses were undergone in 1929,[9] which have been taken out of total capital and surplus in the computation of net worth. The other factor was doubtless the result of abnormal expansions of plant and equipment, particularly in 1929. This item alone increased from 15.2 per cent of the total assets in 1928 to 41.8 per cent in 1929. The 1930 deficit has resulted from a heavy liquidation

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[7] These two items were deducted from the surplus account in 1930.

[8] It is very important to remember, however, in connection with this and other Curtiss-Wright subsidiaries, that the parent company soon undertook a bold and stringent policy of consolidation of producing units and modernization of plants which has a depressing influence upon the ratios toward the end of the decade, but which, if successful, should strengthen them in future years.

[9] In the 1929 balance sheet organization expenses represented 9.7 per cent of total assets while experimental and developmental charges account for 10.9 per cent. These two items were dropped in the 1930 statement.

of current assets and the final write-off of several extraordinary items made necessary because of general business and market conditions.

The financial policy of the Douglas Aircraft Company, Inc., as is indicated by the relationship between surplus and net worth, was the successful maintenance of a relatively high amount of earnings as net worth, particularly during its early years. This has been done coincident with a favorable dividend record.[10] As was shown in the foregoing analysis of this company, heavy borrowings and a difficult beginning in 1921 resulted in a large relative deficit, while financial difficulties in 1922 caused the company to close.

Beginning with 1923, however, surplus represented 39 per cent of the total net worth, 41 per cent in 1924, 53 per cent in 1925, and 83 per cent and 88 per cent successively in the following two years. This proportion of surplus as a source of capital funds is considerably more than double that of the group as a whole (see Table No. VIII). Under good management, the company successfully bid for large government contracts which during 1926 and 1927 alone amounted to 120 planes and 97 planes respectively.[11]

New public financing undertaken during 1928 led to the absorption of the entire surplus account of the Douglas Aircraft Corporation. The enterprise has prospered, however, during the last two years, and has already partially rebuilt this fund. The gain from zero in 1928 to 13 per cent in 1929 and 20 per cent in 1930 reflects the effect of managerial skill and favorable contracts from the government. The Douglas Aircraft Corporation is a producer of military aircraft only, and has been one of the two producers in the field showing an increase in the proportion of reinvested earnings to its total net worth from 1929 to 1930.[12]

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[10] See note showing dividend record of this company, p. 47.

[11] Planes and parts for 1926 had total value of $1,662,723.80; for 1927, $1,970,961. See note 29 showing company's output for past six years, p. 47.

[12] The other producer showing an increase in this ratio is Consolidated Aircraft Corp., another important producer. The third company doing military production only is the Great Lakes Aircraft Corp. This latter company suffered a severe set-back in this ratio for 1930.

The General Aviation Corporation[13] is another company in which the division between capital surplus and earned surplus may have misdirected a true analysis. The comparative balance sheets reveal that two surplus items appear in June, 1929 and run throughout 1930. One of these is the account of earned surplus upon which the ratio has been based, and amounts to 3.9 per cent, 3.3 per cent, and 1.6 per cent of total liabilities for the three periods June, 1929; December, 1929; and December, 1930 respectively.

The other item is that of capital surplus, which at the period closing June, 1929 accounted for 46.3 per cent of total liabilities. By December, 1929 this percentage had increased to 47.2, and one year later had decreased to 37.8. The Fokker company had been organized in 1927 and for the first two years spent considerable sums upon experiments and laboratory research. The year 1929 found it in a favorable productive and competitive position and when earnings were received the company doubtless followed the policy of placing a share of these profits back into the company through the account of capital surplus. How much of this account was made up of earnings, however, and how much has been composed of original receipts from the sale of stock set aside as capital surplus cannot be determined. Whatever this proportion has been, the significant trend bearing upon the entire branch is one of decline experienced in both of these accounts from 1929 to 1930.

The Great Lakes Aircraft Corporation has not been an open corporation long enough for its financial statements to bear individual analysis, but it is interesting in passing to note the causes of the unusual deficit appearing at the end of 1930. The company started out in 1928 with a capital surplus of $200,000, but business reverses by the end of the year had absorbed all of this amount. During 1929 net sales amounted to $412,914.95 while the cost of these sales, including selling, general and administrative expenses and a write-off of inventory, tools, jigs, fixtures (aggregating $489,000.73) amounted to $1,086,756.31. A provison of $175,000 for contingencies increased the total net loss

[13] Formerly the Fokker Aircraft Corp.

for this one year to $949,941.36. During 1930 another substantial loss was suffered on sales, and further adjustment of raw materials, and developmental, organization and engineering expenses produced a deficit for the year which totaled $1,258,832.-74. These operations raised the net total deficit to $2,107,674.10 for the two years 1929 and 1930.

The Keystone Aircraft Corporation does not disclose the true nature of its surplus account in statements made available for this study. Preferred stock has been retired, and a large capital surplus item has been established, but the proportion that the earnings bear to the capital in this item cannot be determined. In June, 1929 just previous to its acquisition by Curtiss-Wright Corporation there appears for the first time an earned surplus account. Prior to 1929, however, the company was relatively unimportant, so that the actual percentage of earnings reinvested in the enterprise need not be disturbing. It is rather their trend that is significant.

The financial activities of Kinner Airplane and Motor Corporation have not permitted the maintenance of a surplus account. The fall in this account indicated for 1930 was a direct result of the reduction of net worth brought about by a heavy developmental expense write-off. This expense resulted, in part, from the development of new engines, and, in part, from the cost of servicing the first 500 engines produced during the latter part of 1929 and all of 1930 which proved to be defective in workmanship.[14]

The Stinson Aircraft Corporation has been exceptionally successful in maintaining a policy of reinvesting earnings. The surplus deficit of 8.3 per cent suffered in 1926 is rather to be expected of a new enterprise's first year of operation. In 1927 it was successful in competing with other commercial producers for new business in an expanding market. This trend continued through 1929, and even though the net worth item increased during this time, the surplus account increased at a greater rate. By the end of the year 30 per cent of the net worth was made up of surplus. The slight decrease to 27 per cent in

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[14] The cost of parts for this defect was over $65,000 and of servicing $159,000.

1930 was caused by a relative increase in the cost of sales. From data made public it has been quite impossible to uncover intimate financial dealings this company has with its parent, the Cord Corporation, but doubtless these favorable performances have been guided, at least in part, by policies inaugurated by this holding company.

The Waco Aircraft Corporation has reduced its margin of surplus over net worth since financial statements have been made public.[15] In 1928 the company maintained 57 per cent of its total net worth as surplus created through earnings. By the end of 1929 this proportion had been decreased to 44 per cent, and by December, 1930 another reduction left the ratio at 31 per cent, indicating that factors were cutting down the normal earnings and reinvestments, or other sources of capital were materially increasing the net worth of the company. An examination of financial statements shows that a large increase in net worth in 1929 was caused by a new issuance of stock. The comparative balance sheets further reveal that the surplus item was augmented considerably in 1929 because of earnings from operations throughout the period, but the large increase in new capital stock and net worth was more than sufficient to offset this increase in the surplus account. Thus both net worth and surplus were strengthened by December, 1929, but the percentage of surplus to net worth actually declined.

The present weakened financial position of the company was doubtless due to the heavy deficit sustained because of 1930 operations. The company followed conservative developmental policies, yet sales for the year were only half those for 1929, and the effects of the depression upon business in general caused the company to suffer severely.[16] The expansion of plant and equip-

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[15] The importance of the Waco Company, prior to 1928, is indicated by the following:

YEAR	AIRPLANES SOLD	NET EARNINGS
1924	15	.....
1926	164	$31,733
1927	349	117,844
1928	659	384,323

Source: *Financial and Commercial Chronicle*, Vol. 128, p. 4176.

[16] Sales for 1929 were $1,585,360.82 and for 1930 $860,467.74. Net Income for 1929 was $123,248.72 and for 1930 was —$106,550.38.

ment in 1929 has proven to be an unwise move, but at that time was encouraged by conditions prevailing in the security market and throughout the industry.

The Warner Aircraft Corporation has continued to increase its surplus deficit throughout the past three years. The stockholders have thus not only furnished all capital for net worth, but in addition have actually contributed more than this net worth item would indicate because of the deficits existing at the close of each fiscal year. While the capital stock outstanding was doubled[17] between 1928 and 1929, the surplus deficit increased fourfold.[18] The percentage maintained as surplus continued to decline during 1930, and finally reached a deficit equivalent to 18 per cent of net worth. Here again losses have been brought about by high overhead and operating expenses in the face of an inactive market.[19]

The final manufacturer to be considered before formulating the group's financial policy regarding surplus as an internal source of capital is that of the Wright Aeronautical Corporation. The importance this company's policies bear upon those of the group has already been discussed. From the relationships given in Table No. VIII, it appears that the company has followed during ordinary periods the policy of directing a substantial

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[17] The amount of capital stock outstanding in 1928 was $498,892; in 1929 $1,025,000.

[18] The amount of surplus deficit in 1928 was $19,597.73; in 1929, $63,913.04; and in 1930, $148,190.92.

[19] The following 1930 Profit and Loss statement of Warner Aircraft Corp. illustrates the plight faced by a number of manufacturers in the industry:

Sales		*Cost of Sales*	
Engine sales	$201,244.00	Material for engines & parts	$203,140.31
Parts sales	43,593.48	Labor—Direct and service	24,323.33
Income from service	8,436.72	Manufacturing expense	69,782.68
Other income	13,950.76	Test Dept. expense	4,621.18
	$267,224.96	Engineering Dept. expense	1,129.72
		Service Dept.expense	6,363.43
		Miscellaneous expense	11,729.95
			$321,090.60
Gross loss		$53,865.64	
Sales expense	$43,553.30		
Administration expense	23,887.14		
Fin. management & expense	7,887.80	$75,328.24	
Net loss from operations		$129,193.88	

share of earnings back into the enterprise. The surplus items for the years 1922–1925 have been constructed upon an estimated division between capital and earned surplus.[20] Beginning with 1926 Wright Aeronautical increased the proportion of surplus to net worth. By 1927 almost half of its total supply of capital funds had been made up of reinvested earnings made possible through favorable profits resulting from an expanding market.

The following three years, however, witnessed a material reduction in the proportion thus maintained. When interpreted in the light of the company's Net Worth to Total Debt ratio, it is discovered that this movement results both from an increase in the net worth through increased stock financing, and (after 1928) in an unfavorable turn in the market for engines and parts, and in business in general. The year 1928 has been excepted because it witnessed the largest dollar net income in the history of the company. But further examination reveals that even though this dollar income was large, nevertheless new capital flotations undertaken in 1929 and subsequent years made the relative amounts of the surplus item decrease (from 42.5 per cent of total liabilities in 1927 to 32.7 per cent in 1928, 24 per cent in 1929 and –8.6 per cent in 1930). The inference to be drawn from the analysis of this trend is that a policy calling for increased capitalization (for expansion, as was suggested in the analysis of the relationship between owned and borrowed capital) together with increased competition and a declining market for its products, has resulted in a greatly decreased proportion of surplus to net worth. Heavy write offs during 1930, together with a strike toward the end of the period which proved to be very costly, have made this account appear as equivalent to a negative 17 per cent of net worth. Thus Wright Aeronautical has not escaped the influences prevalent throughout the manufacturing group as a whole.

The summary to be drawn from the foregoing analyses of

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[20] Earned surplus for these four periods was not distinguished from capital surplus on the balance sheets. The ratios have been computed from earned surplus assumed to be one-half the total capital surplus, which would appear upon careful study of the comparative balance sheets to be conservative estimates for these items.

enterprises is threefold. First, under ordinary conditions the producers of aircraft and parts have followed the policy of directing a substantial part of net earnings back into the industry for additional capital purposes. Second, such a policy has been necessary partly because of the large risks involved in this young industry (that is, instability of market, keenness of competition and uncertainty of the future of commercial development), and partly because of the necessity of strengthening the credit standing of the group so that additional funds might be available. Third, this policy of maintaining a relatively high percentage of surplus funds to net worth increased the earning capacity per stockholder and brought substantial dividends until the organization of competing units was encouraged.

The group trend in the proportion of surplus to net worth from zero in 1922 to 39 per cent in 1927 indicates the measure in which earnings played an increasing part as a source of capital within the branch. The entrance of seven new producers in 1928 (several of these had been organized prior to this time but were relatively unimportant) illustrates the attraction offered to new competition and the credit strength of the industry supporting the financing of these new enterprises. The subsequent decline in the amount of this source of capital was caused by increased competition leading to smaller profits and larger deficits which absorbed surplus funds, and by the external influence of the business depression upon this and allied industries.

Building up an Earned Surplus Within the Operating Branch.—While two operators included in the study were able to build up a surplus account soon after activities were undertaken, the two late entrants in the field have not yet added to their capital supply by means of this policy. As a result of the earnings of the group, the relatively small surplus fund established during the years between 1927 and 1929 had been depleted by the end of 1930, and a deficit had made its appearance.

The surplus deficit showing for the first period (18 per cent of net worth) was only to be expected, for the field was new and untried, and many experiments had to be tested. Air mail poundage (bearing encouraging rates) gained rapidly, however, and by 1927 the deficit account of the previous year was turned

TABLE IX

OPERATING COMPANY GROUP RATIOS
Surplus to Net Worth
Expressed as Percentages

COMPANY	1926	1927	1928	1929	1930
OPERATING GROUP	−18	6.9	4.7	.5	−3.6
National Air Transport.....	−27	−28	−12	10	19
Pan American Airways.....	.....	.....	−1	−5	−8
Transcontinental Air Transport.....	.....	.....	0	−14	−29
Western Air Express.....	.4	35	61	30	24

into a 6.9 per cent surplus.[21] Since the year 1928 marked the entrance of two new operators, it is not surprising to observe that the proportion of surplus to net worth dropped to 4.7 per cent.

The movement for the years 1929 and 1930, however, reflect a definite change in financial performance which was doubtless forced upon the group by both internal and external circumstances. By the former year (1929) heavy deficits reported by two of the companies reduced the surplus fund for the group. This was followed by more losses in 1930, resulting in a deficit by the end of December which amounted to 3.6 per cent of the combined net worth. A brief individual analysis of the operators should reveal the causes of this decreasing proportion that surplus contributed to the capital supply of the branch.

The showing made by National Air Transport (given in Table No. IX) indicates that it has successfully maintained the policy of increasing that portion of owned capital contributed through reinvested earnings. Such a favorable showing in view of growing deficits or reduced surpluses on the part of the other operators has doubtless been due to the mail carrying contracts received by the company. Poundage carried throughout 1928 and 1929 approximated one-fourth of the total poundage carried by all operators.[22] The density both of the mail traffic and of passenger

[21] For development of this branch of the industry, see Appendix N, p. 188.
[22] This company holds mail contract routes between Chicago-New York, and Chicago-Dallas, which last year paid operating revenues of $1,278,358 and $1,198,699 respectively. (See Appendix JJ, p. 229.)

traffic has placed this operator upon a sound transportation basis, thus allowing a portion of the surplus earnings to be consistently reinvested.

The activities of Pan American Airways Corporation and of Transcontinental Air Transport, Inc., have resulted in increasing deficits since their organizations. With Pan American Airways Corporation the deficit has increased slowly. Doubtless this movement has resulted from the large scale development activities undertaken principally in Central and South American countries. In the extension of its passenger and air mail routes around the coasts of these two continents, a great number of airport and hangar constructions have been made, new equipment acquired, and concessions obtained.[23] In the light of the favorable long-term mail contracts held, present activities may prove conservative, and the investors equity may be preserved. In the case of Transcontinental Air Transport, the deficit sustained resulted largely in the fact that density of traffic during this period did not warrant the operation of the line. Such a risk must be taken by all new enterprises, however, and recent mail contracts obtained by consolidating certain routes with Western Air Express have afforded a way in which to reduce this deficit. These two companies have followed the policy that prospective earnings in the future warrant the absorption of all capital contributed from surplus, and the sustenance of actual deficits.

Western Air Express Corporation followed the policy of reinvesting a large portion of earnings as capital until the year ending December, 1929. A reduction in the surplus percentage for this year was largely the result of refinancing, when the company took advantage of its strong financial condition to secure additional capital for expansion purposes.[24] Heavy reductions

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[23] Furthermore while financial statements do not show the company's depreciation policy, it is doubtless true that a heavy write-off of equipment has resulted in the continued use of equipment not carried on the books.

[24] The Western Air Express Corp. was chartered Oct. 1, 1928 to take over the operation of Western Air Express, Inc. In Jan., 1929 the new company exchanged 25 of its $10 par shares for each $100 par (of which a total of 4,283 were outstanding) of Western Air Express, Inc. This exchange fairly reflected the earning power of the original company and gave the new corporation an outstanding capitalization of 107,075 shares. An expansion pro-

in government mail contracts during 1930 coupled with over-expansion of facilities and a payment of dividends out of surplus, explain the slight drop in the proportion that surplus bore to total net worth in December, 1930.[25]

It thus appears that heavy developmental and expansion expenses have rendered it impossible for operators to build up a substantial part of capital from reinvested earnings. When earnings have warranted such a policy the operators have followed this course, but have drawn upon surplus during more pressing financial periods. Government action regarding both the awarding of mail contracts and the rates at which these contracts are awarded has had a strong influence in determining what this policy will be.

Earnings Reinvested Within the Auxiliary Branch.—The fact that diversification has permitted a substantial contribution of earnings to the capital fund of this branch is set forth in the degree to which surplus makes up a substantial part of net worth. Table No. X shows that for the group, omitting duplications, first appearing in 1929 occasioned by the Curtiss companies, approximately 30 per cent of owned capital has been composed of surplus built up through reinvested earnings. In 1927, however, the ratio reaches the impossible level of 103 per cent thereby necessitating explanation. The other trends present a relative steadiness in the maintenance of this relationship.

It will be observed from table No. X that this abnormal increase in the percentage of surplus to net worth has been caused by the entrance of the predecessor Bendix company.

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gram followed, involving the opening of new air lines, construction of airports and hangars, and the purchase of additional equipment. The necessary capital for this program was secured in July, 1929 when 26,718 shares of additional par stock were sold at $45 per share directly to the investor for $1,202,310 cash.

The success of this company is demonstrated by the fact that in 1928 it earned, before taxes, the equivalent of $168.29 on each of 4,283 shares outstanding; in 1929 it earned $7.15 per share on each of 134,693 shares outstanding. In 1930, however, it lost $1.44 on each of 150,698 shares outstanding, but the policy of building up a substantial surplus has enabled the company to meet regular dividend payments since Sept. 15, 1927 to the present time (1931).

[25] The revision of contracts in the spring of 1930 resulted in cutting Western Air Express contract rates approximately one-half. (See contract mail rates, Appendix JJ, p. 229.)

TABLE X

AUXILIARY GROUP RATIOS
Surplus to Net Worth
Expressed as Percentages

COMPANY	1926	1927	1928	J.29	1929	1930
AUXILIARY GROUP	24.8	103	38.1	27.5	29.4	28.4
Aero Supply.....	25	13	24	....	13	−3.2
Bendix.....	....	141	112	32	37	36
Central Airport.....	....	...	....	....	−1	−1.6
Curtiss Aeroplane Export.	....	0	0	−4	−152	−4533
Curtiss Airports.....	....	...	....	0	.1	−10.6
Curtiss Flying Service....	....	...	0	.3	37.4	−716
Irving Air Chute.....	....	...	0	....	58	65
Roosevelt Field.....	....	...	....	0	0	−2.9

An examination of its balance sheet reveals the cause of the 141 per cent and 112 per cent margin of surplus over net worth maintained by this company prior to the organization of the holding company in the early part of 1929. All patents, contracts and goodwill have uniformly been deducted from the total capital and surplus in the computation of net worth. This company had built up a large surplus account prior to 1927. It had also carried a relatively large patent and contract item which in 1927 represented 44.6 per cent of total assets, and the following year, 15.3 per cent. Total capital and surplus for these two years composed 72 per cent and 39.6 per cent of total liabilities respectively.

In following this standardized procedure in the computation of net worth, therefore, the unusually large item of patents and contracts has caused the net worth item for the first two years to appear smaller than the large surplus account. This would indicate that the patents account actually represented real tangible value to the company, due principally to the royalties received upon valuable patent rights used by subsidiary companies in the manufacture of carbureters, brake devices, drives and other automotive accessories. This unusual circumstance was most conspicuous in 1927.

In 1928, however, the influence of the Bendix predecessor was diminished, and by the following year the situation returned to

normal so the value of this part of the analysis has not been impaired. The reduction in the surplus of the Bendix Corporation at the time of the incorporation of Bendix Aviation Corporation may be considered a usual procedure since the original stockholders were in a position to profit from excessive earnings and a large surplus account when new financing was undertaken and old shares were exchanged for the new.

It will be observed from Table No. X that heavy deficits were sustained by each of the Curtiss companies. It is also significant that each of the specialty companies[26] experienced a decline in the relationship between surplus and net worth, and in the case of all but the two airport companies this decline was very severe. On the other hand, two of the auxiliary companies with fairly diversified interests were experiencing trends in the opposite direction. The Aero Supply Manufacturing Company,[27] until the final period, succeeded in maintaining a favorable surplus in its capital supply, but an expansion of assets through the acquisition of subsidiary companies in 1929 and the unfavorable market experienced by its customers caused this company to suffer a deficit in the final period.

That neither of the two airport companies has built up a part of its net worth from reinvested earnings was due to two primary influences. One is to be found in the general credit and business conditions experienced both within and without the industry. The second influence is to be found in the sharp development of competition in the type of service rendered. This competition arose primarily from the general trend throughout the country which led to the investment of large amounts in municipally owned airports, often operating in competition to the commercial fields.[28]

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[26] Central Airport, Curtiss Aeroplane Export, Curtiss Airports, Curtiss Flying Service, and the Roosevelt Field Companies.

[27] Manufactures machines and tools used in the aircraft industry.

[28] In a recent study on airport investments made by the U. S. Dept. of Commerce, Aeronautics Branch, it was discovered that 1,113 airports had (Jan. 1, 1931) a capital investment of $115,068,500. Of these 549 (49.4 per cent) were municipal fields, with capital investments of $58,212,000 (50.3 per cent). The total number of airports of all kinds increased 20 per cent throughout the twelve months of 1930 to a total of 1,843 on December 1, 1930. (See *Air Commerce Bulletin*, Feb. 2, 1931, pp. 379–391.) While

The foregoing analysis leads to the conclusion that the policy of ploughing back a relatively large amount of earnings into the capital fund as surplus has been possible within the auxiliary branch. Diversification of activities has resulted in earnings substantial enough to withstand certain losses, shrinkages of assets, and necessary dividend payments. The group has thus been able to maintain consistently an amount approximating 30 per cent of owned capital in the form of these surplus earnings. Such a policy, however, has been carried out in the face of heavy net deficits suffered by specialty companies included in the group.

Policy Regarding Reinvested Earnings Among Holding Companies.—The policy of holding companies regarding the establishment and maintenance of a substantial surplus account has been influenced by conditions similar to those found to obtain among other producers and operators. The extent to which this branch has reinvested earnings is set forth in the accompanying table (No. XI). It will be recalled from a previous analysis that Alexander Industries, while one of the most important independent producers of aircraft in the country since

TABLE XI

HOLDING COMPANY GROUP RATIOS
Surplus to Net Worth
Expressed as Percentages

COMPANY	1925	1926	1927	1928	J.29	1929	1930
HOLDING CO. GROUP	48	67	21	3	8	1	−13
Alexander, Ind.	48	67	69	22	.....	−33	−35
Aviation Corp.	..	..	..	....	1.4	−4.1	−26.6
Curtiss-Wright	..	..	..	....	9.4	−1.1	−35.3
Detroit Aircraft	..	..	..	....	.....	−94	.....
Fairchild Aviation	..	..	..	−2.4	−1.8	.....	.....
North American Aviation	..	..	..	0	4.5	6.2	12
United Aircraft and Transport	..	..	..	6.7	20.8	25.9	14.9

these municipal airport investments have been of inestimable value to the air transport lines in helping them overcome the heavy financial burdens and responsibilities of pioneering and developmental work, they have also afforded keen competition to commercial fields. In localities where traffic has not been sufficient to support two or more fields, financial losses have often been heavy.

shortly after its aircraft division was organized in 1925, maintains diversified activities including also the film industry. This fact largely accounts for the sizeable proportion of capital funds contributed from earnings prior to 1928. Were it possible to take surplus from the aircraft production alone, this proportion for the first three years would appear considerably less.

Entrance of three new companies by the end of 1928 reduced the reinvested fund considerably, for new enterprises not yet had had opportunity to create surplus accounts. The June, 1929 increase was largely anticipatory and by the end of the year only one per cent of net worth was carried in this account. By the end of the following year heavy losses sustained by the first three companies shown in the above table had wiped out the group surplus entirely, and in its place appeared a deficit equivalent to 13 per cent of the net worth.

An examination of the balance sheet of Alexander Industries, Inc., discloses the reduction for 1928 to be due to a large increase in capital stock, rather than a decrease in the surplus account. Aircraft expansion had been rapid during 1927 and 1928 (see note, page 21), and a schedule calling for the production of 1000 planes was outlined and undertaken in 1929. The aviation market, however, proved to be overestimated. Overexpansion throughout the industry, together with general business depression, found the company at the end of 1929 with inventories that had to be sold during the following year at large losses.[29]

In the case of The Aviation Corporation and of Curtiss-Wright Corporation, the remaining two companies largely responsible for the downward trend of the group, specialization, heavy developmental costs, and subsequent write-offs have been the contributing factors responsble for the negative showings of the ratios. The general influences have already been developed, and the movements of these trends substantiate the tentative policies there stated. The ease with which capital was obtainable, together with the reverses suffered by sub-

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[29] The aircraft division of this company reported net losses for 1929 and 1930 of $443,651.13 and $126,071.22 respectively, against net profits of the film division for these same periods of $155,574.23 and $146,911.33.

sidiary companies, has prohibited the building up of a surplus account through earnings. Subsequent readjustments in their respective financial structures, however, may make such a policy feasible upon an adequate showing of profits.

The circumstances that have permitted North American Aviation Corporation and United Aircraft and Transport Corporation to show an increase in this fund despite the reverses experienced by other companies in all sides have been presented in the foregoing analysis. A policy of diversification and conservative expansion has been the contributing factor. The former company, however, has undergone large unrealized losses in investments as was developed in Chapter II.[30]

Capital funds from external sources have been easily obtainable for this as well as for other branches of the industry. The phenomenal physical growth that this branch has recently experienced, as well as large amounts of capital obtained by new security offerings, has encouraged continued rapid acquisition and allowed exposure to overexpansion. These activities have discouraged a financial policy which calls for the building up of a large share of the capital supply out of earnings, and has actually led to the incurrment of a relatively large surplus deficit.

Policy Regarding Reinvested Earnings for the Industry as a Whole.—Analysis of the policies of the several branches of the industry regarding this important internal source of capital funds has led to a better understanding of the movement of the relationship between surplus and net worth for the total industry presented in Chart No. V at the beginning of the chapter.[31] The provoking characteristic of the movement of this relationship for the entire industry is that surplus gradually became an increased portion of the industry's net worth while based upon the activities of the manufacturing branch; but when the operating, auxiliary and holding companies began to develop, surplus earnings became a relatively less important part in the capital structure of the industry. The decrease in this fund

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[30] See particularly note 49, p. 58.

[31] "Total" there has been based upon:

1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
12.6	....	4.8	5	6.1	29	43	11.3	10.2	7.1	—5.3

continued, until at the close of the decade there appeared an actual deficit equivalent to 5.3 per cent of net worth instead of a conservative surplus which industries usually build up.

What has been the cause of this policy of reinvested earnings? What are the implications? The first question has been answered throughout the anlyses of the enterprises making up the branches, for the financial structures and the financial performances of the twenty-five companies have caused the industry's policy to be what it has been found to be. The acquisition of large funds from stockholders facilitated by ready marketing agencies and an eager security market, together with decreased earnings and heavy losses on every hand, has conspired to check this internal source of capital funds, and to absorb it altogether.

But what are the implications? Can such a policy be disregarded indefinitely? Why should heavy losses have occurred? Has the stockholder contributed too large a supply of owner's funds for the good of the industry's financial structure? Can a greater share of capital be secured upon short-term or long-term credits? Do future capital funds appear to be forthcoming? Only further analysis can reveal the implications of such a policy.

2. *The Relationship Between Long-term and Short-term Indebtedness.*

One of the questions raised in the closing paragraph of the preceding summary and the second question suggested at the beginning of the present chapter have reference to the relative positions of long and short-term debts as a part of capital funds secured from market sources. The analysis of external sources of capital funds has disclosed the policy followed by the industry of obtaining by far the greater share of such funds from stockholders, rather than through borrowings. But the nature of these borrowings, while small in comparison with the total capital supply, is nevertheless important in its influence upon financial and operating policies. If it be discovered that the industry maintains a policy of borrowing principally upon short-term credits, then inventories and other current assets cannot have free play but necessarily will be heavily mortgaged to assure

the liquidation of these borrowings. On the other hand, if most of the borrowed capital is found to be long-term and funded debt, then more responsibilities will be attached to the financial structure, for overhead expenses will be increased by the meeting of regular fixed interest charges.

Policy as Shown by the Statistical Data.—The statistical data for each branch of the industry, and so for the industry as a whole, shows that with the exception of one year practically all borrowed funds have been on short-term rather than long-term accounts.[32] Throughout the entire decade there has been no capital obtained through funded debt among the companies included in the study. What then have been the circumstances under which obligations more of the nature of long-term than of short-term have been assumed causing the slight fluctuation in the statistical data that appears?

Within the manufacturing branch, the only instances in which the total debt has been composed of other than current debt have occurred on account of members of the Curtiss-Wright group. A mortgage payable item representing the residue of a debt due to the United States army and payable in the years 1929, 1930 and 1931 is shown upon the comparative balance sheet for the Curtiss Aeroplane and Motor Company.[33] The action of the Curtiss company in the repayment of this debt, however, has caused it to be of the nature of a short-term rather than a long-term mortgage.

A second case among producers in which a part of total debt was composed of long-term credits involves the Keystone Aircraft Corporation. While the exact nature of its mortgage cannot be determined from the accounts on the balance sheet, it is likely that the proceeds were used either to increase working capital or to expand fixed assets. The July, 1928 balance sheet

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[32] The ratio between current debt and total debt for the entire industry is as follows:

1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
94	37	100	100	100	90	97	98	100	90	92

(See Appendix P, p. 192.)

[33] This item represented the following percentage of all total debt for the group for the years:

1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
63%	34%	75%	80%	75%	41%	24%	17%	0%	0%	0%

reveals the presence of a "purchase money" mortgage, and on October 16, 1928 the company acquired the assets of the Loening Aeronautical Engineers Corporation.[34] Prior to the acquisition of this company, however, the mortgage was fully retired, and the influence upon the total group has been slight.

The only irregularity within the manufacturing group in the proportion between current and long-term debt appears in the case of Wright Aeronautical Corporation for the year 1922. It has been suggested in a previous analysis of this company that a contract was entered into between this company and its predecessor, the Wright-Martin Company, calling for the payment of a total of $3,399,786.09 to the Wright-Martin company, then in the process of liquidation. It is this deferred payable item that has caused the disturbance. These claims, however, were retired before the end of 1923, and thereafter all of the debts of the Wright company were in the form of short-term borrowings only.

It is significant that in all but three instances where small long-term indebtedness items have entered into the financial statements of enterprises within the remaining branches of the industry subsidiaries of the Curtiss-Wright corporation have been involved. The policy of obtaining practically all borrowed capital on short-term credits has undoubtedly been the result of the financial instability of the industry, and the desire on the part of individual enterprises to avoid the heavy burdens of fixed interest payments. It is surprising, therefore, to observe that the Curtiss-Wright Exports Corporation, the Curtiss-Wright Airports Corporation, and the Curtiss-Wright Flying Service, Inc., companies which it has been observed lack diversification of interests and steady income, appear to have obtained a large portion of their respective borrowings through long-term, rather than short-term credits during the past two years (1929 and 1930). It would seem that the nature of the activities of each of the Curtiss auxiliary companies whose long-term debt proportions suggest this policy would prohibit

[34] The Keystone Aircraft Corp. was originally incorporated May 21, 1920 as Huff Daland & Co. This name was changed in 1926 to Huff Daland Airplane, Inc. and to the present title March 8, 1927. It is also possible this mortgage represents a carry-over from the acquisition of assets of predecessors.

their assuming the burden of fixed interest payments. Therefore, it is likely that long-term notes or accounts payable assumed in the acquisition of additional properties should be the probable explanation of the appearances of these long-term credits.[35]

Further examination of the balance sheet items proves this conclusion to be correct. In the case of the Curtiss-Wright Export Corporation,[36] all debt was of the nature of short-term credits until the final period, December, 1930. At this time there appeared two new items upon the liability side of the balance sheet, one notes payable to affiliated companies, and the other accounts payable to affiliated companies which together accounted for 37.3 per cent of total liabilities as at the latter date. The company had increased its relative holdings in physical properties,[37] but at the same time had undergone a heavy write-off of intangibles in the nature of an amortization of foreign sales contract valuations. These operations, added to the influence of a mounting deficit, made it necessary for affiliated companies to extend credits to the Curtiss-Wright Export Company. While such credits may have been carried as short-term, they have not been classified by the company as current, and heavy losses experienced during the last two years will doubtless make the repayment of these credits very indefinite. This has made advisable the classification of the credits as long-term.

The balance sheets for Curtiss-Wright Airports Corporation show similar financial activities. As was previously stated, this company assumed obligations due affiliate companies (amounting in 1930 to 13.5 per cent of total liabilities) which were carried as current. The relationship under observation here, however, has been influenced by long-term credits in the form of a bond and mortgage amounting to 4 per cent of the total liabilities in

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[35] The Current Debt to Total Debt ratios for the companies were:

	1929	1930
Curtiss-Wright Export Corporation	100	32
Curtiss-Wright Airports Corporation	47	89
Curtiss-Wright Flying Service, Inc.	75	95

[36] Name changed from Curtiss Aeroplane Export Corp. upon acquisition by Curtiss-Wright Corp. Other Curtiss companies underwent a similar change of name.

[37] This account was .6 per cent of total assets at the close of 1929, and 13.1 per cent at the close of 1930.

1929 and 1.9 per cent in 1930. While the assumption of such an obligation appears to be unusual among the companies included in this inquiry, the percentage that this debt bears to the total net worth is small, and its relationship to the total debt is likewise relatively unimportant.

The case of Curtiss-Wright Flying Service, Inc., is very similar to that of Curtiss-Wright Export Corporation. In December, 1929 the company had given Curtiss Aeroplane and Motor Company a note equivalent in amount to 15.2 per cent of its total liabilities. Even though this account was carried at that time as a current liability, nevertheless the period ended December 31, 1930, disclosed that the account due affiliated companies had increased to where it represented 58.5 per cent of total liabilities, thus indicating that these intra-corporate accounts between subsidiaries were more nearly of the nature of long-term rather than short-term credits. Exceedingly heavy deficits, discussed in previous analyses of this company, had made such operations necessary to preserve liquidity.

These intra-corporate debts of Curtiss-Wright subsidiary companies have been reflected in the relative positions of current and total debt within the capital structure of the parent company. But since these long-term items of indebtedness have already been disclosed as taking the form of small bonds and mortgages which ran over a period too long to be termed technically as short-term, their existence calls for no further explanation. In December, 1929, this item (long-term mortgages) represented only 1.8 per cent of the total liabilities of Curtiss-Wright Corporation, and one year later only 1.2 per cent.

The three companies outside the Curtiss-Wright group which have carried a small long-term credit as a part of total debt are members of the holding company group.[38] With The Aviation Corporation this borrowing was in the form of a "purchase money and equipment obligation", and appears to influence the proportion of current debt to total debt noticeably only because

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[38] The Current Debt to Total Debt ratios for the three companies referred to are:

	1927	1928	J.29	1929	1930
The Aviation Company	....	....	100	88	74
Fairchild Aviation Corp.	100	100	100	98	95
United Aircraft & Transport Corp.	....	93	100	86	38

of the relatively small size of the current debts during the last two periods. Mortgages payable account for the appearance of long-term obligations in the structure of the Fairchild Aviation Corporation, while in the instance of United Aircraft and Transport Corporation a small mortgage was assumed in the purchase of an airport site.

In this manner holding companies have used the strength of their own capital structure and credit standing to obtain funds for weaker subsidiaries. While it has been impossible, as was stated in the introductory chapter, to uncover but a few of the intra-corporate activities, and thus to present the policies of holding companies to their subsidiaries, these long and short-term debt dealings strongly indicate that such activities have changed the financial structure of parent companies, and in this sense have affected policies relative to both the source of capital funds employed, and the earning power which the use of these funds demonstrates.

Summary and Conclusions.—An inquiry into the nature of borrowed funds has revealed the singular fact that practically all borrowings within the industry have been on short-term credits, and that these borrowings have contributed an almost negligible part of the total capital supply. Within the operating branch no funds have been secured upon long-term credits, and within the other three groups most enterprises have refrained from assuming long-term obligations. Why should this be the case?

While the element of financial risk within the industry has been large, the chance for gain has been equally great, and funds have not yet been found wanting. The fact that practically all funds borrowed are on short-term accounts testifies to the uncertainty of returns from operators and producers, for all funded debt, long-term notes and mortgages require fixed interest payments. This charge mounts, causing an increase in overhead and fixed expenses which the industry has not yet been able to assume. The capital must be largely owned until such a period of financial stability is reached which will enable the industry to obtain a fairly constant income with which to meet fixed charges brought on by the acquisition of capital through borrowed as well as owned funds.

CHAPTER IV

Financial Policies Relative to Capital Distribution and Usage

Financial policies relative to the acquisition of capital funds have been revealed thus far in the inquiry. The present chapter proposes to continue the development of policies, this time revealing those relative to capital usage and its distribution among the assets. This proposal calls for a consideration of (1) the proportion of the three divisions (fixed, current, and other) of assets within total capital; (2) the extent to which owned capital is invested in fixed and other assets (or total fixed investments); and finally (3) the extent to which owned capital covers the gross amount of working capital (that is, total current assets). The first is a quantitative measurement of policy, while the others act as qualitative measurements.

It is imperative at the outset of such a proposed undertaking to recognize the danger of misinterpretation in holding any individual company to a group standard. Rather should the emphasis of such an analysis be placed upon the determination of financial policies for the whole industry. Since the basis for a general analysis of the factors in financial policies has been established in the preceding chapters, the subsequent analysis will be more general and will attempt to establish the policies for the four different branches of the industry with only occasional reference to the activities of the individual companies which make up each group. Thus a briefer analysis is permitted, in which each branch must be analyzed before the general policies of the entire industry may be brought to light.

1. *Manufacturing Group*

Capital Distribution Into Current Assets.—One of the policies regarding the distribution of capital among the assets is that revealed by the movements in the relationship between current assets and total capital. It will be observed from Table No. XII

that this ratio for the manufacturing branch of the industry, passes through two periods of upward movement. While, as was pointed out in Chapter II, the first five years have been based upon only three companies, the trend is nevertheless representative of the entire group of manufacturers since these three companies produced over three-fourths of all aircraft and engines. The decline in 1922 was doubtless due to necessary liquidations and a poor market brought about by the business depression. During the next three years, however, the liquid position of the group remained relatively strong when approximately 60 per cent of total capital was composed of current assets.

The years 1926 and 1927 witnessed an expansion of capital equipment and an entrance into the field by three new manufacturers, which resulted in a decrease in the proportion of current assets to 45 per cent of total capital. Few capital flotations were made, however, until 1928. Between this year and June, 1929, there occurred a sharp upward movement in this proportion, the trend reaching its highest point at the latter period when 82 per cent of total capital was in the form of current assets. By the end of 1929 another decline had made its appearance.

In this analysis it is important to remember that the total capital (net worth plus total debt) may not always equal the total assets, since intangible items, as was explained in the introductory chapter, have been deducted in the determination of net worth. While this fact would not affect an analysis of the trend, it would slightly alter the less important movements, and change the relative importance of the current assets in the balance sheet for the group. The 100 per cent balance sheet for the companies included in this branch shows that total current assets composed the following percentages of total assets as of December 31:

1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
38.4	38.5	36.6	35.2	38.0	39.5	39.8	59.0	76.0	64.0	59.4

This trend corroborates the conclusion drawn from an examination of the data contained in Table No. XII. The percentage

TABLE XII

CAPITAL DISTRIBUTION AND USAGE
In the Manufacturing Group

Balance Sheet Relationships Expressed in Percentages

RATIO	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
Cur. Assets: Tot. Cap.	61	40	59	58	61	45	45	62	82	70	71
Prop. and Equip.: T. Cap.	24	16	32	31	28	22	23	33	16	22	28
Goodwill: Fixed Assets	45	39	36	35	34	31	33	10	31	26	49
Other assets: Tot. Cap.	55	37	53	59	57	37	34	5.1	1.5	7.2	4.4
N. Wth.: Prop. and Eq.+Inv.	122	166	108	118	128	160	168	247	576	403	324
Cur. Assets: Net Wth.	91	66	80	68	71	51	52	69	88	76	74

remains stable during the early years of the decade, when approximately one-third of total assets was in the form of gross working capital. Beginning with 1928, however, and extending through the first half of 1929, large amounts of financing and the entrance of new companies in the field increased the proportion of current assets.

We must postpone a breakdown of this share of capital, however, until the following chapter. Unless further analysis discloses that this rise has been largely the result of increased inventory which has been built up by overexpansion, or that it has kept funds from being used more efficiently in fixed investments, this increase in the proportion of current assets would appear to strengthen the working capital position of the group. The net result of this movement indicates that the policy of the group as a whole has changed from one of maintaining about one-third of total capital to one of maintaining approximately two-thirds of total capital in the form of current assets.

Investments In Property and Equipment.—A second policy as to capital distribution is that demonstrated by the relationship of property investments to total capital.[1] The largest share that such investments contributed in the composition of total capital with the exception of 1928 is to be found between the years 1923–1925, when almost one-third of the manufacturers' capital supply was in the form of property and equipment. At that time post war readjustments were being rapidly completed, surplus war supplies had greatly diminished, and the government had announced a large building program.

Companies entering the field in 1926, having been attracted because of greater earnings shown by the old producers, and encouraged by the prospects of an expanding market, dis-

[1] The following shows the relationship between the items composing fixed assets and total assets for the years:

Fixed:	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
Bldgs., ports, eqpt...	15.0	15.7	19.8	18.9	17.6	19.2	20.2	31.5	14.8	20.7	23.5
Goodwill, patents...	12.5	10.4	11.0	10.4	9.0	8.8	10.0	3.7	7.2	6.8	11.5
Other fix. assets.....	....	....	....	....	....		....	1.0	1.2	1.9	2.0
Total Fix. Assets..	27.5	26.2	30.8	29.3	26.5	28.0	30.2	36.2	23.2	29.3	37.0

turbed the equilibrium of these proportional placements of capital. New companies brought with them a fresh supply of capital obtained through the sale of securities, which had the effect of increasing net worth and thus decreasing the percentage of property and equipment to total capital as the table indicates.

By December, 1928, the boom experienced within this branch of the industry had encouraged the expansion of plant and equipment then operating and the erection of new plants by other newly competing companies. At the same time, this new influx was being apportioned as well to the current assets account. Such a development was possible only because these new capital flotations were greatly increasing the net worth of the industry, and physical expansion, though fast, was lagging behind the increase of capital going into current assets.

It is apparent that as consolidation increased and as both net worth and total capital decreased during 1929 and 1930, the proportional share of capital directed into physical property increased. A part of this change has been carried on by a reduction of current assets, and a part by the reduction of net worth suffered through the burdens of heavy deficits and extraordinary write-offs already reviewed.

What is the significance of this shifting trend in capital distribution? Inquiry thus far has shown that financial development has been more than ample to take care of the growing increase in production made necessary by a growing market. What then are the implications of this increase in both current assets and fixed assets of which property investments are the most important part? Further analysis of financial activities should point toward the answer.

Capital Directed Into Other Assets.—It is in the trend of the relationship of other assets to total capital that the greatest quantitative change in the distribution of capital among aircraft producers has taken place throughout the past decade. It will be recalled that this account refers to such items as deferred charges, investments and all assets other than fixed or current. In 1921 they made up 55 per cent of total capital. With the exception of this drop in other assets that by the end of 1922 reduced its position to 37 per cent of the producers' total

capital, there was little change in capital structure, and little shifting in the relative positions of these asset items.[2]

In 1926, however, other assets began to decline, and by 1928 they were equivalent to only 5.1 per cent of total capital or 4.9 per cent of total assets. This low level was maintained throughout the remaining years of the period. The phenomenal drop was doubtless due to the fact that with the development of the holding companies came a transference of all investments and assets other than current and fixed over to the accounts of the parent company. The decrease of this account thus permitted an increase in current assets and the enlargement of fixed assets that have been reviewed above.

Maintaining an Adequate Margin of Liquidity.—Analysis of the group policies thus far has had particular reference to changes in the position of asset accounts. But what margins of liquidity have been maintained as the distribution process has been carried on?

One relationship which tends to measure the quality of the use of capital is that determining the margin between net worth and fixed investments[3] which, if liquidated, would doubtless restrict production activities. A steady upward trend in this relationship took place between the end of the year 1922 and June, 1929, thereby following closely the trend of current assets in terms of total capital. New capital obtained during these years was increasing net worth, but was not being completely used by expansion of fixed assets. Instead large amounts were being carried in current asset items, thus strengthening the margin of net worth over fixed investments.

By the end of December, 1929, however, the movement toward consolidation had relieved the individual companies of a part of their excessive current items and had led to a relative expansion of assets. Furthermore, large deficits suffered and made considerable inroads upon net worth, and, as a consequence,

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[2] The percentage of Other Assets to Total Assets for the manufacturing group during the period was as follows:

1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
34.3	35.6	32.6	35.5	35.2	32.4	30.2	4.9	1.2	6.6	3.7

[3] Fixed investments here used in a general way represent property and equipment plus investments, as was defined in the introductory chapter.

the margin of net worth over fixed investments had begun a decrease, continuing throughout the year 1930. While the margin still remained relatively high, this downward trend reflected the influence of important factors which were weakening the group's financial structure.

The quality of financial policy regarding the use of capital employed can be further measured by the relationship between current assets and net worth. At the opening of the decade 91 per cent of net worth was in the form of current assets. The next four years witnessed a considerable fluctuation in this proportion, and by 1927 it had decreased to where only half the net worth was in the form of liquid assets. The next two periods which ended in June, 1929 experienced an increase, however, and the decade closed with the current assets representing about three-fourths of total net worth. The causes of such a movement need not be repeated here.

Summary.—The preceding review of financial activities among manufacturers regarding the distribution and usage of capital makes possible a summary of policies:

(1) Current assets have been strengthened in their position, rising from a proportion of approximately one-third to one of two-thirds of the total capital.

(2) "Property and equipment" has been increased slightly in its proportional share within the assets, but occupies at present about one-third of the total capital (when the the goodwill and patents item is included).

(3) Other assets have been decreased from a position where they composed about one-third of the total capital to one of practically no importance.

(4) Owned capital has been made to hold a relatively high margin over fixed investments, although this margin has decreased considerably throughout the past two years.

(5) Current assets have always accounted for over half the net worth and recently have been equal to approximately two-thirds of net worth.

2. *Operating Group*

It might seem quite unusual if financial and operating policies followed by air mail and passenger transportation companies were found to be identical with those of the commercial and military plane manufacturer, or the aircraft auxiliary company. The nature of operations of an air line causes quite different demands to be made upon the capital structure of such enterprises. Passenger tariffs are received as the service is performed. Investments outside of operations might be guided by policies that are being followed only within the experience of the operators. Activities make different investment demands upon the capital structure.

Such conditions could give rise to a financial organization and the pursuit of policies far different from those of other branches included within the inquiry. But it is well to remember that this branch has obtained its capital through the same channels as have the other branches, and that the funds have been acquired under conditions similar to, and at a time identical with acquisitions of other groups. In other words, then, even though operating activities within this branch are fundamentally different in character from those of the rest of the industry, still both internal and external financial conditions have influenced the industry's four branches in much the same manner. Further analyses should produce these similarities and dissimilarities in financial structure and policy, and should reveal the influence this branch has had upon the entire industry's general policies relative to capital usage and distribution.

Policy of Decreasing Current Assets.—One distribution policy is revealed by the shifting position of current assets. With the exception of the year 1928, these items have been decreasing in proportion to total capital. Table No. XIII sets forth the extent of this decline. The relatively high showing for 1928 was occasioned by the entrance of Transcontinental Air Transport, Inc. into the group, bringing with it for the first period a large amount of cash and other current assets. But the general policy, however, has been to decrease the proportion of capital used in this division of the assets. Such a trend is only to be

expected, for as the new operating companies become more settled, a greater share of capital is needed for other than current assets, since inventories are low and most services are performed upon a cash or short-term basis.[4]

TABLE XIII

CAPITAL DISTRIBUTION AND USAGE
In the Operating Group
Balance Sheet Relationships Expressed in Percentages

RATIO	1926	1927	1928	1929	1930
Cur. Assets: Total Capital.....	43	49	83	43	32
Fix. Assets: Total Capital.....	55	19	26	52	62
Goodwill, patents: Fixed Assets..	0	0	12.8	5.7	20.4
Other Assets: Total Capital.....	15	27	16	12	32
Net Worth: Prop. and Equip. + Inv.....	172	176	297	173	140
Cur. Assets: Net Worth.....	45	60	85	46	36

More Current Assets Placed Into Fixed Assets.—The general increase in the proportion fixed assets bear to total capital lends strength to the observation made above. Total capital for 1926 was relatively low. Thereafter, an expansion and consolidation program reduced the proportion of current assets over fixed assets and caused the proportion to rise. Even though a part of the increase that took place after 1928 was due to the goodwill item carried on the books of Pan American Airways Corporation (as is shown by the table) a relative increase in fixed assets over total capital was nevertheless experienced. Whether or not this physical development resulted in over-expansion must be determined in the light of both present and prospective earnings. An answer to this question has already been suggested.[5]

The Share of Other Assets In Total Capital.—The relationship between other assets and total capital set forth in the above table (XIII) indicates that the expansion of fixed investments

[4] Mail revenues, which account for over 80 per cent of the operator's revenues, are received monthly.

[5] See discussion of operating company policies in Chapter III, p. 76.

was not entirely in the form of fixed assets. The companies, especially after the entrance of two operators in 1928, joined the movement under way in all branches of the industry calling for consolidations and the acquisition of subsidiaries or minority interests in other companies. The balance sheets of the individual operators, without exception, carry an increasing item during the last two years representing important investments in affiliated companies. This movement must be included as a part of the group's expansion program.

Expansion Further Demonstrated by Relative Increase in Fixed Investments.—This operators' expansion program is further indicated by the trend between net worth and fixed investments. In 1926 net worth was approximately one and three-quarters times that of fixed investments. During 1927 and 1928 this margin was strengthened, since the additional capital secured through new security issues and the building up of a surplus account went largely into current rather than fixed assets. By 1929, however, the physical development of the operators caused a decrease in this ratio, which continued through to the end of 1930, when net worth was less than one and a half times that of property and equipment plus investments. This decrease becomes even more impressive in the light of a constant increase in net worth brought about principally by continued acquisition of new capital. New capital was obtained entirely through stockholders, for no funded debt has been incurred, and any short-term debt assumed has been highly negligible.

Margin of Liquidity Over Owned Capital.—The relationship between current assets and net worth further corroborates the statement of policies developed above. It is here necessary to make allowance for the decrease in net worth caused by deficits sustained by the operators, but since the position of current assets has decreased through the years 1926–1930 from 85 per cent to 36 per cent in terms of net worth, the margin of liquidity that the former account holds toward capital has become less as more of this capital fund has been for expansion purposes.

Conclusion.—The above interpretation reveals great similarity between the operators' policies and those already developed. The policies may be summarized as follows:

(1) A heavy expansion program has drawn a part of current asset funds into fixed and other assets, and has taken a part of new capital secured through stock issues directly into this fixed investment field. Justification of this policy must be based upon present and prospective earnings.

(2) The goodwill and foreign mail franchise item has accounted for a part of the increase in fixed investments.

(3) The consolidation movement outlined in Chapter I has been taken up by operators as well as by other groups within the industry.

(4) The margin of owned capital (net worth) over fixed investments has decreased throughout the past three years.

(5) The degree of liquidity of net worth has been reduced coincident with the present expansion program.

3. *Auxiliary Group*

Reducing Current Assets in Terms of Total Capital.—There has occurred a considerable reduction in the relationship between current assets and total capital within the auxiliary group, shown by the movement of the first ratio in Table No. XIV. This decline has taken place since June, 1929, and has resulted from two major influences. One was a large increase in capital stock that took place particularly during 1928 and 1929 when several new companies entered the field. The other was the fact that a heavy expansion program witnessed in other branches

TABLE XIV

CAPITAL DISTRIBUTION AND USAGE
In the Auxiliary Group
Balance Sheet Relationships Expressed in Percentages

RATIO	1926	1927	1928	J.29	1929	1930
Cur. Assets: Total Capital...	88	80	71	82	66	41
Fixed Assets: Total Capital..	16	166	45	104	111	153
Goodwill, patents: Fixed Assets.....	.....	75	56	77	69	66
Other Assets: Total Capital...	.5	17	61	4.8	10.8	12.8
Net Worth: Prop and Equip. + Inv.....	591	191	112	362	274	282
Cur. Assets: Net Worth.....	92	102	90	88	71	44

of the industry was also undertaken by the auxiliary companies. Capital investments thus reduced current assets, and the group as a whole followed the policy of investing fewer funds in current assets, and more in other assets.

Building Up Fixed Assets.—With the exception of one year, fixed assets among auxiliary companies have continued to become an increasing part of total capital. An examination of the individual balance sheets shows the abnormal percentage of 166 for 1927 to be due to the entrance of the Bendix company. This company owned valuable patents and royalties (as was explained in Chapters II and III) which, according to uniform treatment, were deducted from the capital stock and surplus in the computation of the company's net worth for each year. Since the company's assets made up a large proportion of the group's total assets at this early period, this procedure has unduly affected the proportion under consideration. The further movement of this relationship for the entire group, however, reveals that more capital was being placed into physical investments.

Investments in Subsidiaries and Affiliates.—It is quite clear that additional capital obtained by the group was also flowing into assets other than fixed assets, but that the flow has been divided into two definite periods. The above table (No. XIV) indicates an upward movement in the Other Assets to Total Capital ratio which culminated in December, 1928. This would suggest a rapid development of investments and acquisition of subsidiary companies. By June, 1929, however, the Curtiss-Wright Corporation was being formed, and this new holding company drew away from the group three of its active companies.[6] The trend from this time (June, 1929) on, was nevertheless definitely upward, showing that the remaining companies were continuing the policy of investments in outside companies and affiliates. The analysis of this group presented

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[6] The three companies that joined Curtiss-Wright at that time were (June, 1929):
Curtiss Aeroplane Export Corp.—Total capital and surplus... $1,512,229.13
Curtiss Airports Corp.—Total capital and surplus..... 25,017,392.31
Curtiss Flying Service, Inc.—Total capital and surplus..... 8,770,332.80

in Chapters II and III has already established the results of the diversified investment and fixed asset policies which this trend and the one preceding have indicated.

Reestablishing a Conservative Margin of Net Worth Over Fixed Investments.—The auxiliary branch of the industry has recently been able to reestablish a conservative margin of owned capital over fixed investments. In 1926 the net worth was almost six times that of fixed investments. During the following two years, however, as a result of the entrance of several companies carrying heavy fixed asset accounts, the margin was reduced to the point where (in 1928) net worth was only 12 per cent more than fixed investments. By June, 1929 new capital replenished net worth, and this together with the withdrawal of the Curtiss-Wright subsidiaries raised the proportion to 362. More recent investments have reduced the margin even against a declining net worth brought about by a shrinkage of assets, but it appears still relatively strong since there has been no funded debt and owned capital must therefore account for all assets throughout the group.

The Degree of Liquidity of Owned Capital.—A large part of the additional funds used in the expansion of fixed and other assets has come from owned capital through current assets. While the downward movement of current assets in terms of net worth reveals this activity,[7] the size of this proportion demonstrates the fact that there has been much real value in the "patents, drawings, and goodwill" item which was deducted in the determination of net worth carried by Bendix Aviation Corporation.

4. *Holding Company Group*

In taking up an analysis of the holding companies with particular reference to capital distribution among assets, it is again necessary to recognize the scope of activities carried on within this branch of the aviation industry. It might be

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[7] A more accurate picture of the extent of the decline for this group may be had by observing the percentage of current assets to total assets as follows:

1926	1927	1928	J.29	1929	1930
84.0	30.5	40.3	43.5	35.5	20.2

thought that because the aviation holding companies are essentially a different type of company they consequently would disclose a different type of financial policies. Such reasoning does not necessarily follow. That they are a different type of financial enterprise has been acknowledged throughout the present study by their classification as a different branch. That they have financial policies, particularly in regard to capital distribution and usage, that are basically different from those of other branches is not necessarily true.

It must be admitted, however, that their financial policies do assume characteristics which are peculiar to the holding company group. The case of intra-corporate borrowing has already been illustrated. The financial power that these organizations have wielded in the acquisition of capital funds has been another factor which has affected their policies.

Analysis thus far presented has shown this group's important policies to be quite similar to those of other branches of the industry except in cases similar to the two mentioned above. That they should be similar in most respects is to be expected since their financial performance is based upon the actual production and operation activities of subsidiary companies similar in every detail to those found within other branches. Whether their policies as developed continue to be similar should be disclosed by a completion of the inquiry.

Proportion of Total Capital Used as Current Assets.—Current assets, in terms of total capital, have steadily decreased during the life of the holding company group. Moreover, large amounts of new capital have been obtained through the issuance of stock which has increased total capital and thus tended to reduce the relationship between current assets and total capital still further. The downward movement suggests that a part of the capital thus obtained was held in current assets for a short time, but even a larger share was placed into assets other than current. It is only to be expected that a new group within the industry would gradually diminish its current asset account as new placements of capital were made into fields of fixed assets or investments. This activity has been actively pursued by holding companies within the industry.

TABLE XV

CAPITAL DISTRIBUTION AND USAGE
In the Holding Company Group
Balance Sheet Relationships Expressed in Percentages

RATIO	1925	1926	1927	1928	J.29	1929	1930
Cur. Assets: Total Capital...	180	142	97	70	61	56	47
Fixed Assets: Total Capital..	92	78	85	11	33	43	49
Goodwill, patents: Fixed Assets.....	51	43	64	26	15	4	3
Other Assets: Total Capital...	7	13	7	24	12	10	12
Net Worth: Prop. Equip + Investments.....	171	157	205	308	247	186	182
Current Assets: Net Worth...	277	192	142	74.3	64	62	50

Proportion of Total Capital Used as Fixed Assets.—Aside from the year 1927, Table No. XV shows a steady climb in the proportion of fixed assets composing the group's total capital. The preceding analysis has already shown this financial policy to be followed within the group, and the previous chapters have developed the causes of such a trend.[8] It will be recalled that this trend occurred even though the holding companies were inaugurating a stringent policy of heavy write-offs of intangibles and developmental expense incurred in subsidiary company organization and an amortization of drawings and patents.

Proportion of Total Capital Used in Other Investments.—The third division of capital among the assets is one in which funds are invested in other assets. The relationship revealing this policy has been fairly steady, except for one year, 1929, when other assets assumed a proportion to total capital equivalent to twice that of any other year. The explanation for this increase seems to be found in the observation that at that period holding companies were just beginning to gain hold on enterprises that were later to be their subsidiaries, and the accounts representing these new interests thus appeared as investments. Examination of the 100 per cent balance sheet shows the investment item as representing 22 per cent of total assets for this year, while the nearest "other asset" item accounted for but .5 per cent of the total assets.

[8] See Chapters I, II and III.

By June 30, 1929 most of the acquisition had been accomplished, and but few other additions were made from the investment account. The gain in the relative division of capital from that time on, as the above analysis has demonstrated, was experienced in the fixed assets account when new property was being obtained or when subsidiaries were acquired outright in a short period of time. By the end of 1929 the movement was almost completed. Few major changes (relatively speaking) have been witnessed during the past year.

The Absorption of Owned Capital Into Fixed Investments.— The movement of the relationship between net worth and property equipment plus investments represents the degree to which owned capital is absorbed by fixed investments. In 1927 net worth was equal to two times these fixed investments. A large increase in net worth during 1928 raised this margin to three. Additional property and equipment acquired during the following period, however, reduced it to less than two times that of fixed investments. By the end of December, 1930 heavy reductions in net worth made further reductions in the margin maintained, until at the latter period there was carried by the group $1 in fixed investment for each $1.82 of net worth. Moreover, funded debt was not undertaken by the group, except in the case of relatively small mortgage or note issued in the acquisition of additional property. Practically all investments were thus financed by owned rather than borrowed capital.

Policy Relative to the Degree of Liquidity of Net Worth.— If the above analysis has correctly portrayed the financial policies relative to capital distribution and usage within this branch of the aviation industry, then a decrease in the proportion of current assets to net worth would be expected, for it has already been observed that some of the funds for physical expansion have been furnished through recent capital flotations, and some have been drawn from current assets. Table No. XV suggests the extent to which the latter policy has been followed within the holding company group. The effectiveness of such a policy can be measured only by earnings over a period of time. Meanwhile, however, more of owned capital has been directed into a less liquid position.

Summary.—The financial policies followed by holding companies in regard to capital usage and its distribution among the assets as developed have been quite similar in basic characteristics to those for other branches, and may be summarized as follows:

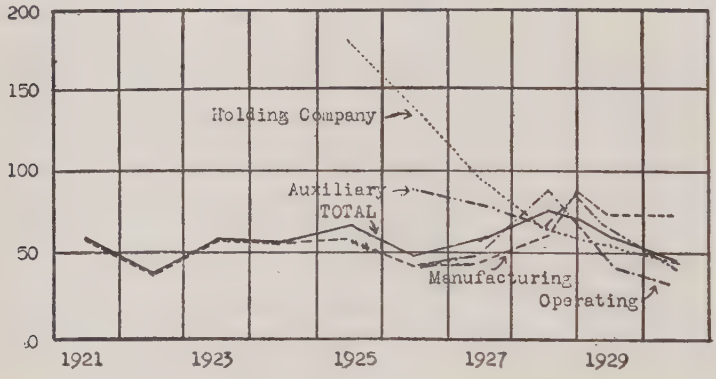
(1) There has been a definite shift in the policy relative to the division of capital among the assets. The result has been that current assets are gradually being absorbed mainly by fixed assets as occasion arises.
(2) Property and equipment now represents the bulk of fixed assets, since intangible items have been largely written-off during the past two years.
(3) The account of other assets has remained relatively small and stable since the close of the rapid consolidation movement.
(4) Owned capital furnishes practically all funds used for assets. Its margin over fixed investments has been decreasing, but still remains relatively high.

5. *The Industry's Policies Relative to Capital Distribution and Usage*

The analysis of capital distribution and usage presented within the present chapter has revealed financial policies for the several branches which are quite similar in character. While certain variations have been observed, it is possible to formulate several general financial policies common to the industry as a whole.

One policy may be drawn from a comparison of the trend followed by the comparative fluctuations of current assets in terms of total capital. In the following chart (No. VI) the disturbing influence of the 1928 and early 1929 period are clearly evident. With the exception of the manufacturing branch of the industry, there has been a marked reduction of current assets over total capital. While it has been the policy of aviation companies to maintain an average of over 55 per cent of total capital in the form of current assets previous

CHART No. VI
COMPARISON OF GROUP RATIOS
Current Assets to Total Capital
In Percentages



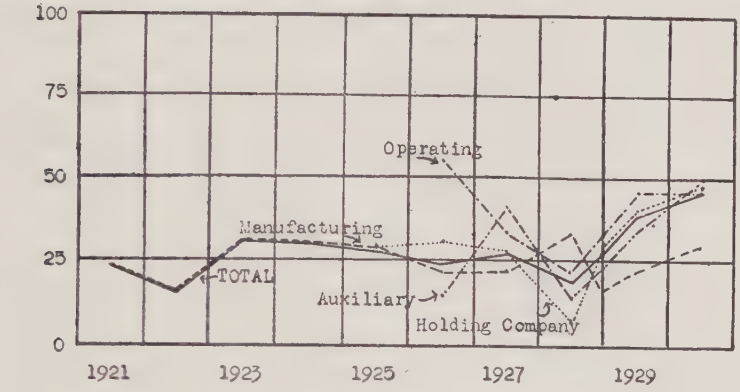
Source: Compiled from Appendix.

to this period, the trend in this proportion has been definitely downward. The manufacturing group has kept this decline from being more severe than it has been, but it has recently dropped to 47 per cent.

This reduction has resulted from two primary changes in the financial structure of the industry. One change is found in a remarkable increase in capital investments which placed more money into the hands of the industry than it appears could be profitably invested for a number of months. The second has been indicated by the changes in the relationships between fixed assets and total capital among the several branches. While these changes during the first half of the decade have been relatively unimportant, a shifting policy is definitely revealed by its movement throughout the last four years. This increase in fixed assets becomes all the more pronounced in the light of a lower percentage of intangibles maintained throughout the last three years.

The impetus given property and equipment investments beginning with the 1928 period is clearly indicated by the trends in the above chart. Most significant is the fact that the

CHART No. VII
COMPARISON OF GROUP RATIOS
Property and Equipment to Total Capital
In Percentages



Source: Compiled from Appendix.

real influence was felt in the manufacturing branch first, a year or two in advance of the other industries (except the auxiliary field.) The subsequent rise in equipment investments has been near unison within the industry. Companies have maintained this policy by gradually acquiring subsidiaries and by investing in other property accounts. The trend of the proportion between other assets and total capital strongly suggests that this movement of lowering other assets in terms of total capital through consolidation and merger has run its course, and that the holding company has largely been the result. Other assets now account for but a small share of total assets.

The industry followed the policy of increasing the margin of net worth over property and equipment until June, 1929. Since then, however, this proportion has been decreasing. While the margin maintained at present should still be ample to assure necessary liquidity of funds, the reversal of the upward trend has been brought about by two movements having a heavy influence upon its capital structure. One of these movements has been the physical expansion of property, and the other the contraction of net worth because of recent heavy

losses. These conditions strongly suggest the presence of overexpansion and challenge further inquiry as to the productivity of these funds.

A final policy of the industry revealed through the usage of capital is that relative to debt and working capital. There has been no funded debt, for most capital funds have been furnished by stockholders, and but few have been obtained on short-term credits. However, the past three years have witnessed a reduction in the liquidity of the investor's net worth. Finally, gross working capital still accounts for approximately half of net worth. The placement of these funds into fixed investments may have produced greater earnings, but again such a policy may have led to overexpansion, and may thereby be at the basis of the industry's major financial problem. Further analysis leading to an examination of working capital and a measurement of earning power should establish the consequences of these and other policies.

CHAPTER V

Financial Policies Reflected Through Working Capital

The analysis presented in Chapters II to IV have developed certain financial policies within the aviation industry relative to borrowed and owned capital funds, and the distribution of these funds among current assets and fixed investments. A third group of policies is closely allied with the working capital of each group, for the efficiency with which these working capital accounts are used determines in a large measure the profitableness of the industry. In attempting to disclose these principles again it becomes necessary to revert to certain relationships which combine important balance sheet items in such a way that an analysis of their movements throughout the decade reveals the underlying policies. The present chapter will carry the analysis through the four groups of the industry in attempting to discover what these policies have been.

There are several phases to such a treatment. One has regard for the quantitative aspect of working capital, and should therefore measure its supply. This suggests the application of the current ratio as the tool best fitted to demonstrate the industry's policy concerning the margin of current assets maintained over current liabilities. A second phase suggests an inquiry into the shifting position of net working capital to fixed assets, for the trend of this relationship should demonstrate the policy concerning the amount of working funds used to maintain plant and equipment. Still another phase suggests an examination of the relative changes between net sales and current assets, thus giving further evidences as to the sufficiency of working capital by measurement of the rate of turnover.

A final policy may be found in the shifting relationship between sales and operating revenue on the one hand, and receivables or merchandise on the other. In this part of the analysis, however, it will be necessary to substitute ratios which perhaps reveal this policy in a less definite manner, for sales data have not been completely available, and therefore cannot

be followed too closely. However, the shifting position between the various items of gross working capital can be detected in the 100 per cent balance sheets which may supplement the above treatment as conditions warrant.

It seems hardly necessary to suggest that the above interpretation must be made in the light of general business and financial conditions briefly outlined in Chapter I. Any fluctuation in the business cycle means changes in prices, and these bring about variations in the value of certain working capital items, for there occur changes in merchandise inventory and marketable security values as well as a change in the real value of notes and accounts receivable. It has been impossible to meet this situation completely in this study, for the balance sheets usually have not disclosed the method of treatment of these various portions of gross working capital. This circumstance, however, limits rather than prohibits the interpretation of the relationship as shown by these various comparisons.

1. *Manufacturing Group*

There has been great variation in the composition of working capital funds within the manufacturing branch of the aviation industry as is set forth in Table No. XVI. While this instability makes more difficult the task of discovering the policies that have influenced the movements of balance sheet relationships (for there appear inconsistencies in trend movements when the relationships are interpreted together), nevertheless further examination may serve to explain these apparent inconsistencies, and aid in the formulation of general policies that may be otherwise disguised.

Financial Policy Indicated by Relationship Between Current Assets and Current Liabilities.—The conventional two to one ratio has not been maintained within the manufacturing branch. During the early years of the decade when only three producers composed the field, the relationship appears more nearly what would be expected of manufacturing concerns. By 1928, however, the entrance of new firms and new capital (largely in liquid form) caused an increase in current assets over current

TABLE XVI

FINANCIAL POLICIES REFLECTED THROUGH WORKING CAPITAL

Manufacturing Group

Expressed as Percentages

RATIO	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
Cur. Assets: Cur. Liab.....	179	245	222	395	375	339	296	578	1101	778	1454
Net Wkg. Cap.: Fix. Assets..	62	87	65	90	105	99.7	87	135	297	190	149
Net Sales*: Cur. Assets.....	60	62	105	144	118	168	158	93	8.8	51	85
Merchandise: Receivables....	548	484	257	217	147	115	324	245	384	487	398
Receivables: T. Assets.....	4	5.1	5.9	6.1	8.3	11.8	6.6	6.3	4.6	5.3	5.9
Merchandise: T. Assets....	21.8	24.5	15.3	13.2	12.2	13.6	21.4	15.4	17.4	25.8	23.3
Cash: Total Assets.....	11	3.0	8.4	5.9	5.0	7.8	8.2	29.5	53	23.7	17.6
Net. Wkg. Cap.: Sales.....	73	95	52	52	62	42	42	89	1029	170	108
Net Wkg. Cap.: Rec.....	425	451	344	433	335	236	397	774	1517	1051	940
Net Wkg. Cap.: Mdse.....	78	93	133	199	227	206	123	316	394	215	236

* Note: The sales figure as at June 31, 1929, for each branch of the industry was based upon a six month period only, and therefore cannot be compared directly with full year periods. An average for a full year can be computed by multiplying the June sales by two.

liabilities to 578 per cent. Previous analyses have described this movement as continuing until June, 1929. At the latter period there appeared upon the balance sheets of the companies making up this group $11.01 of current assets for each $1 of current liabilities. Such an unusual rise must be contributed in part to the number of companies for which the June, 1929 statements were available.[1]

Discounting the latter period, however, the increase in current assets over current liabilities nevertheless remains pronounced throughout the remaining periods of the decade, ending 1930 with a ratio of 1454. This trend becomes all the more impressive when it is recalled that more current assets, relatively speaking, were being directed into fixed investments, as was revealed throughout the analysis of the preceding chapter. But this movement took place largely after June, 1929, so it is only the period following this date that remains to be explained.

Why, then, should there occur the remarkable increase in current assets over current liabilities throughout the last two periods? Since this increase has not resulted from a relative increase in current assets, it then must be explained upon the basis of a relative decrease in current liabilities. It is here that the major cause is to be found. Previous considerations have developed the policy of overexpansion of inventories. With large sales taking place prior to December, 1929, there were created heavy accounts and notes payable and current liabilities resulting from cash deposits on purchases of products. During the latter period, however, purchases of materials decreased abnormally while each manufacturer attempted to dispose of heavy inventory supplies. Coincident with this came a decrease in deposits upon purchases.

These two factors conspired to cause the increase experienced between current assets and current liabilities during the latter period. While the margin is still more than ample to insure adequate protection over current liabilities, the preceding analysis suggests this high relationship to be a sign of financial

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[1] See statements in Appendix, p. 197, which show number of companies covered for each period.

weakness rather than of strength. A further examination of Table No. XVI may substantiate this inference.

Policy Suggested by Changes in Net Working Capital and Fixed Assets.—A second policy revealed through working capital is one suggested by the relative changes between net working capital and fixed assets. This relationship signified a steady increase of net working capital over fixed assets until the close of 1925, to be followed by a downward trend during the next two years, then by another upward climb to June, 1929. However, the year 1930 witnessed a decline ending with $1.49 of net working capital for each $1 of fixed assets.

As was suggested in preceding chapters, a trend indicating an increase in fixed investments among producers must be carefully weighed in view of financial policies pointing toward the strong possibilities of overexpansion. If overexpansion is a phase of the industry's major financial problem, then a large margin of net working capital affords increased incentive for a continued expansion of fixed investments which augments this financial difficulty. It may be possible for an enterprise to carry relatively large amounts of surplus working capital through several years awaiting opportunities for wise permanent investments. But in an industry where these funds have been obtained with comparative ease, the chances offered through early expansion of fixed assets often lead to the placement of these surplus funds, even if such investments be made in the face of an already overexpanded field of activity.

Policies Revealed by Other Balance Sheet Relationships.—The policy disclosed in the movement of the relationship between net sales and current assets appears contrary to sound business principle unless there has been a definite program of expansion outlined within the branch which has made necessary the accumulation of an increasing amount of working capital. Such a program, however, must be seriously questioned. It would be well to examine the factors that have influenced the proportion of net sales to current assets.

The rate of turnover increased steadily (with the exception of the year 1925) until 1927. From this date, however, until the end of 1929 the movement reversed, and current assets

maintained an increasing proportion to net sales. In spite of a rapidly developing market, new capital was making available an increasing amount of gross working capital. The relationship improved somewhat between 1929 and 1930 when net sales increased from 51 per cent to 85 per cent of current assets, but this increase resulted in spite of a decrease, rather than because of an increase, in net sales. A heavy decrease in current assets brought on by large deficits and a continued expansion of physical property accounted for this slightly improved showing. The movement since 1927 does not appear impressive, but rather lends evidence of overcapitalization within the group.

This financial policy, as well as the others preceding it, are further illustrated by the shifting relationship in the position of working capital items. Manufacturers of aircraft and engines decreased the proportion of merchandise to receivables between 1921 and 1927. This action resulted from two activities. First, it was brought about in part by a relative decrease in inventories, thus demonstrating an increase in business volume. Secondly, the decrease in the proportion of merchandise to receivables experienced between these two years was due in part to an increase in receivables resulting from the increased sales being handled more through short-term credits and accounts.[2]

By December, 1927, however, an expansion of producing plants, together with a tendency for each plant to increase its inventories to meet the anticipated increase in demand, led to a rapid rise in the margin of inventories over receivables. The change taking place after this time (1927) resulted primarily from a change in the inventory rather than the receivable item, as is indicated by the 100 per cent balance sheet for the group. The results of this expansion of inventory supplies have been fully discussed in a preceding analysis.[3]

As was suggested in the opening paragraphs of this chapter, it has been necessary to omit the analysis of certain ratios because of the unavailability of sales data for several of the

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[2] See the 100 per cent balance sheet for this group, Appendix U, p. 201.
[3] See Chapter II.

companies included.[4] There are several other relationships, however, which serve to supplement the part of the analysis referring particularly to the position of working capital.

Three proportions deal with the relative positions of receivables, merchandise, and cash on one hand and total assets on the other. It will be seen from the table above (No. XVI) that receivables have remained stable throughout the ten-year period under observation, having fluctuated within the narrow margins of from 4 per cent to 11.8 per cent of total assets. This indicates that the group's policies have changed but little so far as sales are concerned. Finance companies may have taken over the financing of the increase in sales which appeared from 1928, but so far this new development of instalment selling has not effected any marked change in the proportion the receivable item bears to total assets.

The proportion merchandise bears to total assets within the group is considerably more pronounced. The effects of heavy market conditions and large stocks of war supplies outlined in preceding pages are clearly indicated for the three producers during 1921 and 1922. This part of the group's financial structure, however, remained practically unchanged from this time until 1927 when anticipated expansion led to increased production before sales took place. Prospective business was realized during the following two years, but in 1929 the producers began to suffer heavy inventory losses in the process of reducing these large stocks upon a deadened market.

The remarkable change in the relationship between net working capital and merchandise occurred in the periods of 1928 and June, 1929. This emphasizes the importance not only of the increase in net working capital, but also of merchandise inventory during the periods ending December, 1929 and 1930, as the above analysis has set forth. The relative shifts of these three items (of sales, receivables, and merchandise) further illustrate the changing positions of items composing the working capital.

An indication of the growth of the gross working capital

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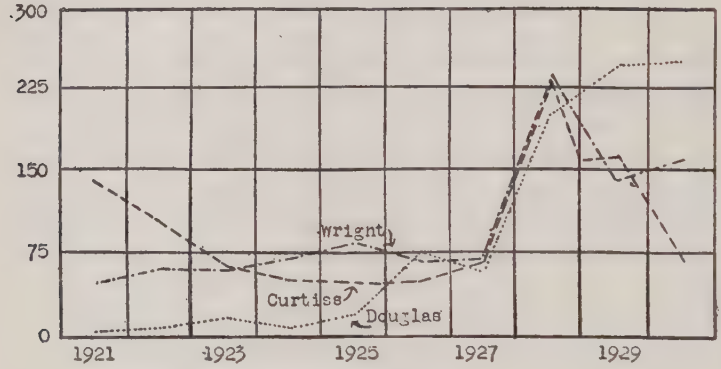
[4] For list of companies whose sales have not been included in the group, see Appendix S, p. 197.

within the producing branch of the industry during this ten-year period may be found in the trend of total current assets for the three leading manufacturing companies. Chart No. VIII shows that during the first six years of the decade, current assets

CHART No. VIII

COMPARISON OF INDICES BASED UPON THE ARITHMETIC AVERAGE OF TOTAL CURRENT ASSETS

1921–1930
for
Three Leading Manufacturing Companies
Individual Years Expressed as Percentages of Their Respective Ten-Year Averages



Source: Compiled from Appendix

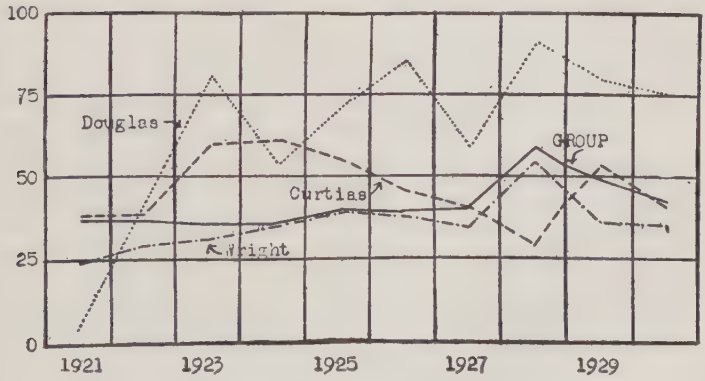
for each of the three individual companies were, on the average, only approximately 50 per cent of their ten-year averages. Between 1927 and 1928, however, each company experienced additional financing activities, and the trend representing the total current assets for each producer shot upward simultaneously. The Douglas company had started from the ground in 1921, and the movement of its total current assets tended to remain below those representing the two older companies during the first six years. However, after the financing operations had been completed, and the current assets were being diminished in the case of both the Curtiss and the Wright companies (as is demonstrated by the downward trend beginning at 1928) the movement of the Douglas current assets continued upward,

thus reflecting the unusually favorable liquid condition being maintained because of sound business volume and substantial earnings.

In spite of this absolute increased liquidity in the form of current assets as shown above, each of these producers, and the group as a whole, actually experienced a relative decrease in the percentage that their total current assets bore to total assets during the last year or two of the decade. This is clearly shown by the movements presented in Chart No. IX. The period beginning December 31, 1927 witnessed a relative rise in current assets for Douglas, Wright, and the group (all manufacturing companies), followed during the next two periods by a downward movement. The Curtiss ratio, however, drops between the years 1924 and 1928, and rises one year after the others rise, to drop again at the end of the decade during one single year.

CHART No. IX

TOTAL CURRENT ASSETS OF THREE MANUFACTURING COMPANIES
Compared with Group Average
1921–1930
Expressed as Percentages of Their
Respective Total Assets and Total Liabilities



Source: Compiled from Appendix

The significant policy presented by these movements of representative relationships is one which brought about a gradual increase in the relative position of gross working capital through-

out the first six years of the period, then rapidly expanded this part of total assets by additional financing only a few months prior to the period of widespread financial expansion, and ended the period by directing a greater part of this increased gross working capital into fixed investments.

Summary.—Financial policies within the manufacturing group of the industry as revealed by working capital show a lack of definiteness that normally appears within a group of established producers. Working capital is abundant, and has not yet been entirely directed into permanent investments. In view of the preceding analysis of this branch of producers, it is evident that there is a want of proper balance in the distribution and positions of greatest efficiency. Whether such is possible under the present financial structure of the industry is a question that must be inquired into further throughout a final analysis of this group in Chapter VI. The analysis thus far has revealed, however, that this group of producers has allowed its financial policy to shift with general credit and market conditions.

2. *Operating Group*

It is not possible to present a detailed analysis of the operating group from the data contained in Table No. XVII. However, certain policies are suggested from the movements of these trends even though the period covering the life of this branch of the industry is relatively short. The current ratio moves with great variation, and since 1928 the trend appears to be definitely downward. Current assets, after having been replenished by the organization of two new operating companies in 1928,[5] were gradually being reduced by extensive expansion of airways and equipment. In 1927 a payable item in current liabilities decreased the margin of current assets over current liabilities, but the movement from 1928 throughout 1930 is most significant, for it represents the change in the margin of net working capital for all four operating companies combined. Such recently acquired capital funds are gradually

[5] Transcontinental Air Transport, Inc. and Pan-American Airways Corp.

being placed into more productive positions. Especially is this true in the operating division of the aviation industry where

TABLE XVII

FINANCIAL POLICIES REFLECTED THROUGH WORKING CAPITAL
Operating Group
In Percentages

	1926	1927	1928	1929	1930
Current Assets: Current Liabilities	1220	265	2077	836	326
Net Wkg. Capital: Fixed Assets	71	89	306	74	36
Operating Revenue: Current Assets	92	107	39	107	162
Receivables: Total Assets	6.9	8.4	6.2	5.5	6.6
Cash: Total Assets	18	29	40	11.6	7.3

capital proportions must be experimented upon in order to establish sound financial and operating policies.

The proportion between net working capital and fixed assets further demonstrates this placement of current assets into an expansion of physical equipment. Likewise the increasing proportion of operating revenue over current assets shows a growth of revenue. While current assets were becoming a relatively smaller part of the capital funds, the revenues of this branch were steadily increasing from $393,099.56 in 1926 to $11,590,515.91 in 1930.[6] When this movement has had time to run its course, the ratio will doubtless become more nearly stabilized at a point which allows a high degree of efficiency in the use of current assets. Since most business of the operating companies is carried on upon a cash or short-term credit basis, one would expect the rate of turnover to be indeed heavy, being indicated by a further rise as the industry becomes settled.

Receivables have continued to occupy a steady proportion of total assets. The most abnormal condition appears in the variation in the size of the cash item which increased from a total equivalent to 18 per cent of total assets in 1926 to 40 per cent in 1928. Figures for June, 1929 have not been available

[6] See Appendix W, p. 205.

but by December, 1929 this item appears to have been of minor importance again. As this branch of the industry grows older and more stable, the movement of these items will doubtless point toward a more definite policy.

Summary.—The foregoing analysis has demonstrated that the operating group has had ample funds in the form of current assets. This branch has attempted to judge the future demands for air service in drawing these funds from current assets into fixed assets and investments.

The policy as reflected by the movement of the relationship between current assets and current liabilities has been one leading to a decrease in the current ratio. However, it has not yet approached the conventional two to one proportion. Fewer funds are being held in a liquid position, and the increase in operating revenues is affording a higher rate of turnover of working capital. It thus appears that these financial policies are still in the formative period, and their statement can be held only tentatively pending a further development of operations.

3. *Auxiliary Group*

Policy Revealed by Trend in Current Ratio.—The auxiliary group has followed the policy of maintaining a large margin of current assets over current liabilities. But here again is to be found a high degree of variation similar to that which has characterized the policies as revealed through the working capital of the two groups analyzed thus far. The current ratio for 1926 represents $19.50 of current assets for each $1 of current liabilities, and thereby suggests a high degree of liquidity caused by funds recently obtained from security issuances. A decline occurs during the two years 1927 and 1928 when the cash and current items of 1927 were reduced through investments and other placements of capital funds, and when the normal short-term obligations and other payables increased the current liabilities.

The period ending June, 1929 witnessed a large increase in this relationship. While the trend was somewhat influenced by the fact that the balance sheets for only two companies were

available, still these two companies represented about 90 per cent of the total assets of the whole group. The increase in

TABLE XVIII

POLICIES AS REFLECTED THROUGH WORKING CAPITAL
Auxiliary Group
In Percentages

RATIO	1926	1927	1928	J.29	1929	1930
Cur. Assets: Cur. Liab.	1950	318	293	1126	736	541
Net Working Capital: Fixed Assets	518	33	105	73	52	22
Net Sales: Current Assets*	65	.....	.....	.....	.....	.....
Merchandise: Receivables	1058	143	137	125	208	203
Receivables: Total Assets	6.6	10.7	5.5	4.7	3.5	3.6
Merchandise: Total Assets	70.5	15.8	7.6	5.9	7.3	7.2
Cash: Total Assets	5.6	4.0	26.9	29.1	22.3	8.3

* Data not available.

the current ratio was rather caused from a decrease in current liabilities which fell from 13.6 per cent of total liabilities in 1928 to only 3.9 per cent in June, 1929.

The decline from this date (June, 1929) throughout the remaining two periods resulted from that same expansion program which, as has been repeatedly emphasized, has characterized other branches of the industry. The period closed, however, with an ample margin of current assets over current liabilities, the proportion standing at $5.41 to $1 on December 31, 1930.

Policy Reflected in Relationship of Net Working Capital to Fixed Assets.—The relationship between net working capital and fixed assets gives further witness to this changing policy relative to the supply and position of working capital. The entrance of one auxiliary company in 1927, bringing with it relatively heavy fixed assets, caused a drop in this relationship from 518 per cent in 1926 to only 33 per cent in 1927. This change occurred simultaneously with a relative decrease in net

working capital, but by the end of the following year the proportion had recovered to 105 per cent.

As the new companies within the group gradually placed their capital funds into plant, equipment, patents, and other fixed assets, this margin of net working capital decreased until by the end of 1930 it accounted for only 22 per cent of total fixed assets. The period under examination is not long enough to determine at what figure this proportion will remain, but a changing policy is clearly shown.

Policy Reflected Through Shifting Positions of Other Capital Accounts.—The trend of merchandise in terms of receivables illustrates two phases of development during this five-year period. Since the major part of receivables for 1926 is represented by those for newly organized companies, practically none were carried on the balance statements thus causing the relationship to appear unusually high.[7] Then followed a three-year period during which merchandise was reduced relative to receivables. The supplemental ratios show that the important change occurred in merchandise inventory when improving market conditions led to a relative reduction in supplies. During this same period the percentage that receivables bore to total assets remained within a narrow margin of fluctuation. A substantial increase in merchandise inventory by the end of 1929 combined with a small reduction in the importance of receivables to cause an increase in the margin of merchandise inventory over receivables for this period, and was maintained at the end of 1930.

Summary.—The auxiliary group has enjoyed an adequate supply of working capital. During the most intense period of financial inflation this capital supply represented over 40 per cent of total assets.[8] Since this time there has been a gradual placement of this supply among other assets of a fixed nature. It must be observed, however, that within this branch, as within the preceding two, unusual variations have taken place both in supply and in the position of working capital, thus making a consistent policy impossible.

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[7] See Appendix DD, p. 213.

[8] From 100 per cent statement for the auxiliary group.

4. *Holding Company Group*

Policy of Maintaining a High Margin Over Current Liabilities.—An adequate margin of protection was maintained over current liabilities by members of this branch of the industry throughout the first two years of their existence. In 1927 this relationship dropped somewhat due to the entrance of a new holding company, but in 1928 additional new capital held in the form of current assets pending investment caused the remarkable increase in the current ratio to 1350 per cent. Continued development of the holding company movement during the first six months of 1929 resulted in a further rise to 1470 per cent. During the eighteen months intervening between December, 1927 and June, 1929 the total current assets had grown from $1,623,392 to $119,929,719, while total current liabilities had increased from $555,684 to only $8,151,971.[9] New capital secured through the sale of new stock issues was held mainly as cash and call loans. Such activities on the part of holding companies are clearly demonstrated by the movment of the percentage cash bore to total assets shown in Table No. XIX. In 1927 the cash and call loan item composed 2 per cent of total

TABLE XIX

SUPPLY AND POSITION OF WORKING CAPITAL
Holding Company Group
In Percentages

RATIO	1925	1926	1927	1928	J.29	1929	1930
Cur. Assets: Cur. Liabilities.....	448	456	292	1350	1470	663	918
Net Wkg. Cap.: Fixed Assets.....	151	142	75	611	174	112	86
Net Sales: Cur. Assets.....	130	156	154	59	27	65	75
Mdse.: Receivables.....	6.0	19.5	49.5	102	268	258	232
Rec.: Total Assets.	57	49	32	7	3	5	5
Mdse.: Total Assets	3.4	9.5	16	7.4	8.3	12	11
Cash: Total Assets.	.6	.8	2	40	34	20	8
Govt. and List. Sec.: Total Assets.....	0	0	0	12	12	15	20

[9] See balance sheet items for the holding company group, Appendix EE p. 215.

assets, while at the end of 1928 this item had increased to 40 per cent of total assets, and in June, 1929 still stood at a high point of 34 per cent. Liquid cash funds, however, were gradually reduced, and by the end of 1930 only 8 per cent of total assets were carried by the holding companies in the form of cash or call loans.[10]

By December, 1929 a relative increase in current liabilities occurred. This was the direct result of an expansion of productive and operating activities of subsidiary companies. In the following period, 1930, a heavy liquidation of payables led to a reduction of current liabilities amounting to almost one-half their 1929 level. While current assets experienced a 25 per cent drop over the previous year, this decrease was not as great as the drop in payables, and the margin of current assets over current liabilities again increased.

Group Policy Relative to Working Funds Used to Maintain Activities.—It is evident from the above analysis, then, that as time passed after the obtaining of an abundant supply of new capital, holding companies followed the policy of gradually investing it in forms of fixed assets and investments. Such a policy is further demonstrated by the relationship between net working capital and fixed assets. Since the proportion net working capital has borne to fixed assets moved downward from 611 per cent in 1928 to 86 per cent in 1930, the period covered cannot reveal how much larger the fixed asset item is destined to become, but it does present a constantly shifting policy.

We have already discovered the holding companies' policy in the reduction of the margin of current assets over current liabilities. While this action has had its influence upon the policy now under consideration, previous analyses have repeatedly developed activities leading to the gradual placement of a large share of current funds into fixed assets. Thus new capital acquired during the early days of 1929 was soon used to obtain properties in an expansion program, or to make possible far reaching consolidations and mergers. It has been this latter activity that has caused the larger portion of the decline in the percentage of net working capital to fixed assets.

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[10] See movement of the Cash to Total Asset ratio, Chart No. XIII, p. 134.

Further Evidences of the Supply of Working Capital.—An unfavorable condition makes its appearance within the group in the form of a decreasing rate of turnover. Since all business activities are carried on for the purpose of monetary gain, and since monetary gain is determined in a large measure by the efficiency of the use of working capital relative to the volume of business, a decrease in the relationship between net sales and current assets becomes extremely significant. This shifting position is indicated by the Net Sales to Current Asset ratio, which fell from an average level of approximately 150 that had been maintained until 1928, to one of approximately 60 maintained thereafter.

Such a drop may have been caused by a change in either or both of the items upon which the relationship is based. As has already been shown,[11] the percentage of total assets carried as current accounts in the group balance sheets shifted from 51.3 in 1927 to 67.5 and 58.5 by December, 1928 and June, 1929 respectively; but by the end of the decade the percentage had actually dropped below the average maintained during the early years. A large decrease in current assets would normally cause a considerable increase in the proportion of net sales to current assets, but there actually occurred only a slight increase in this relationship.

The major explanation is to be found in the proportionate decrease in net sales brought on by a flooded market, and by a relatively decreasing demand because of consolidations among operators, a falling off of enrollment in training schools, and other similar factors. A continued reduction in surplus working capital, together with a return of a normal sales market would lead to an improvement of this turnover position.

Other Policies Reflected Through Working Capital.—A further change of policy taking place at the time of the entrance of important holding companies into the group (1928–1929) is indicated by the shift between merchandise inventory and receivables. In 1927 merchandise inventory was equal to 49.5

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[11] See movement of current asset item in the 100 per cent balance sheets, Appendix GG, p. 217.

per cent of receivables. By the end of 1928 this percentage had increased to 102, and by June, 1929 it had reached 268.

Several factors worked together to bring about this change of policy. In the first place, consolidations which occurred in the organization of the parent companies had brought together large stocks of inventory supplies. Analysis presented in Chapters II and III has shown the problems of plant consolidation and concentration of activities faced by the parent companies in economy and efficiency programs launched after acquisitions were made. These large inventories, together with an augmented stock encouraged by an expanding market during 1928 and the first half of 1929, tended to increase the margin of merchandise over receivables.

A second factor which led to an increase of merchandise over receivables was one influencing the methods of financing sales. The consolidation movement brought vertical as well as horizontal organization. In this way several holding companies brought within their organizations both producers and consumers.[12] Naturally the financing of inter-subsidiary activities upon the books of the holding company would be largely a matter of balance cancellations which would reduce the size of the parent company's receivables item. Moreover, several companies as was previously indicated were financing their sales either through finance companies,[13] or were requiring heavy purchase contract deposits which also tended to decrease the receivables item. The change of working capital policy appears simultaneously with the formation of the holding companies and the easy credit conditions prevailing in the market during the months prior to October, 1929.

Further evidences of these same policies can be observed in the

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[12] This is illustrated by such companies as Aviation Corp. with its present Manufacturing Division (American Aeroplane and Engine Corp.) and Operating Division (American Airways, Inc.); Curtiss-Wright with its manufacturing units and training fields; United Aircraft and Transport with such producing subsidiaries as Boeing Airplane and Transport Co. and operating units as National Air Transport, Inc. (See Organization List, Appendix A, p. 175.)

[13] Such as, for example, General Aviation Corporation's financing of sales through the General Motors Acceptance Corp. (See p. 47.)

movements of other supplementary relationships presented in Table No. XIX. Receivables have taken a minor position among the total assets, while merchandise has become of greater relative importance (except for a 1 per cent decrease in 1930 caused by heavy liquidations already explained). Cash, as has already been suggested, occupied an unusual position among the assets at December, 1928 and June, 1929; but government and listed securities appear now to be absorbing a part of current assets formerly carried as cash and call loans. Another portion is being directed into fixed investments.

Summary.—Certain financial policies relative to the position and efficiency of working capital within the holding company group have been suggested from the above analysis. They may be briefly summarized as follows:

(1) Holding companies have followed the policy of maintaining a high margin of current assets over current liabilities. This condition suggests three possibilities. (a) Funds secured during the intense speculation period of 1928–29 were obtained too easily and cannot be profitably directed from current accounts into fixed investments. (b) An abnormally high current ratio must be maintained within this branch of the industry because of inherent peculiarities of financial structure and of operations which necessitate a large margin of current assets over current liabilities. Finally (c) this policy of maintaining a high current ratio may indicate that some of the funds secured during 1928–1929 are still being held in current accounts pending satisfactory opportunities of permanent investments.

(2) Further analysis has demonstrated the last of the three possibilities presented above to be the policy more closely followed, although other policies previously discovered, leave room for a serious question as to whether these surplus working capital funds can contine to be profitably directed into productive fixed investments.

5. *Summary and Conclusions*

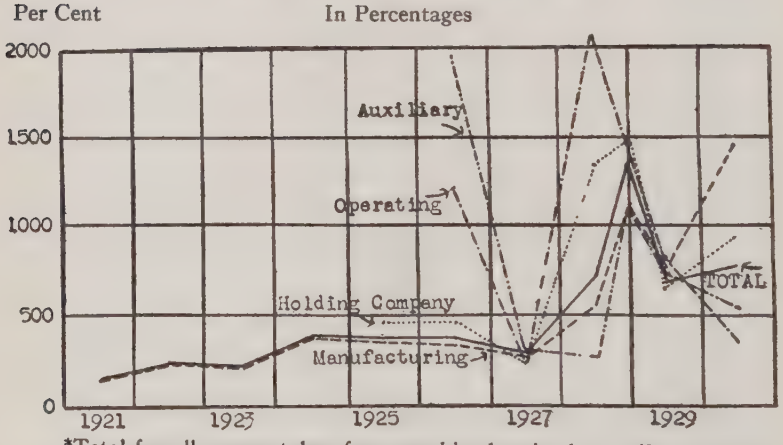
The analysis followed through in the preceding pages in

attempting to determine the sufficiency of working capital and the margin of liquidity maintained over current debt, has led to the conclusion that policies followed are still indefinite in nature. It may be possible, however, by combining the policies of the four branches within the industry to set down several general conclusions.

1. While the general policy of the whole industry in regard to the proper proprotion to be maintained between current assets and current liabilities has been one of maintaining more than the conventional two to one margin between gross working capital and current debt, nevertheless a glance at Chart No. X clearly indicates what a wide degree of variation has been exercised among the several groups in maintaining such a margin.

CHART No. X

COMPARISON OF CURRENT RATIOS OF EACH GROUP
TO
TOTAL FOR ALL GROUPS*: 1921–1930



*Total for all groups taken from combined ratio sheet. (See Appendix P, p. 192.)

This policy appears to be definite among the companies until 1926. Beginning at this time, however, unusual financing circumstances caused a wide degree of variation to prevail. This want of a more precise policy regarding the amount of the margin of current assets over current liabilities was most pronounced

in the auxiliary and operating branches at first, as the movements of their respective trends in the above chart strongly suggest. Wide dispersion was prevalent until December, 1929, when all groups maintained about $7.50 current assets for each $1 of current debt. Uniformity did not prevail, however, and the close of the following year (1930) found a large variation in the margin of liquidity over debt.

The net result of these combined policies may be considered as representative of the industry as a whole. The policy of maintaining between $2.50 and $4.50 in current assets for each $1 of current liabilities was followed until the period of rapid expansion of physical assets and of the financial structure. The industry apparently had little regard during this period for the maintenance of any conventional margin.

The important observation to be made, however, is one concerning the policy as indicated by the general trend in the movement of this margin of liquidity over debt, rather than one of the degree of the movement. It is clear that the tendency throughout the whole period has been definitely upward. The question may thus be raised as to whether or not this is a permanent policy. Can the industry afford to continue to build up its margin of current assets over current liabilities? Do activities necessitate the continuance of such a policy, or has this action led to the creation of a serious problem that must soon be solved?

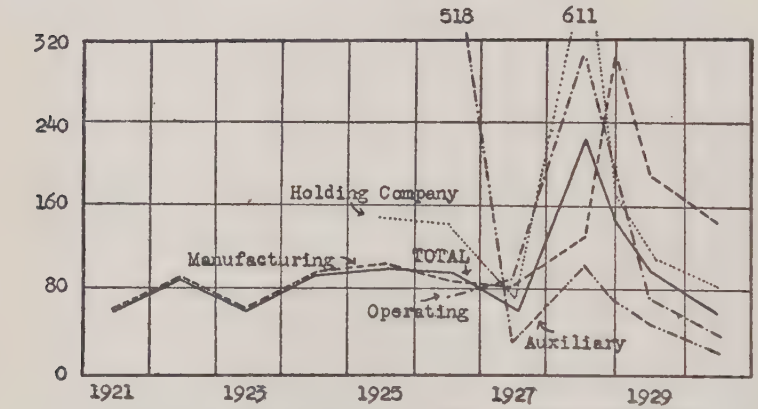
2. The policy of maintaining a decreasing amount of net working funds to insure continued operations within the industry as a whole is strongly suggested, even though the individual group policies have been less distinct. Chart No. XI presents the proportions of this decrease. The policy during the first five years of the period was one of relatively increasing net worth or decreasing fixed assets. By 1927 the market conditions had increased activities, resulting in a decrease in the part net working capital played to fixed assets. The subsequent period brought many variations in policy, but with one exception expansion again started to absorb the surplus net capital in 1928, and the policy from that date on through the following two years was a united one of using these surplus current funds in fixed assets (and in part in deficits and heavy write-offs).

CHART No. XI

RELATIONSHIP OF NET WORKING CAPITAL TO FIXED ASSETS

Each Group Compared to Total for All Groups*

1921–1930



*Data for all groups taken from total combined ratio sheet. (Appendix P, p. 192.)

The question that presents itself in the statement of this financial policy is one not dissimilar to the one suggested (in 1) above. If the industry has assumed a united policy of reducing net working capital maintained in proportion to fixed assets, why has such a policy been assumed, and how far may it be carried? It is obvious that there is a proper proportion of working capital to fixed assets within each industry, and greatest efficiency can be maintained when such a relationship is established. However, greater fixed investments create greater production capacities, and these in turn lead to more idle machinery and greater depreciation and obsolescence losses, unless the market is able to absorb such increases in production. The question thus becomes one centering about the proper relationship between this working capital and investments on one hand, and production capacities and markets on the other. If the markets are unable to support the output of present equipment and of operations carried on at capacity, and if these surplus

current funds must be directed into fixed assets to become productive, then it becomes necessary to probe further into the industry's financial problem in attempting to discover a solution to this dilemma. Such would strongly suggest that the answer will be found in determining to what extent, if at all, too much capital has been drawn into the industry, and the formation of a capital structure that will permit a normal earning power. But a continued discussion of these questions must be postponed until the final chapter.

3. During the last half of the decade the industry has reversed its policy as to the relative position of merchandise and receivables. Between the years of 1921–1925 merchandise was gradually diminished. Heavy war supplies carried over into the early years of the decade were liquidated, and receivable accounts represented principally by final adjustments made by the government for war materials were augmented. These two influences worked together to cause a decrease in the relative position of these two current asset items.

This policy, however, appears to have ended at mid-period, as is clearly suggested in Chart No. XII. An expanding market

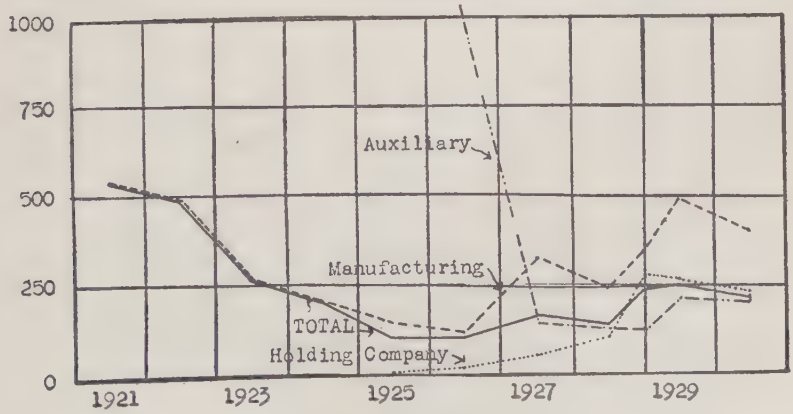
CHART No. XII

RELATIVE POSITION OF MERCHANDISE TO RECEIVABLES

of

Individual Groups Compared to Total for All Groups

In Percentages



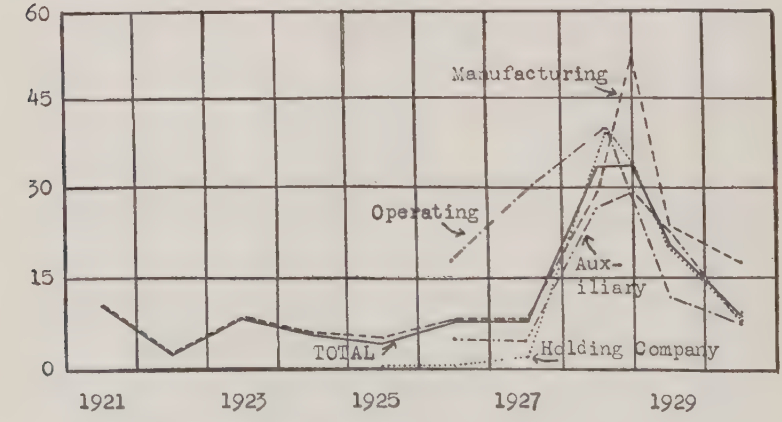
Source: Compiled from Appendix.

encouraged the increase of inventory. Easy money conditions, coupled with new methods of financing sales which entered into the manufacturing and auxiliary groups led to a relatively greater percentage of cash business and thus reduced the receivables items. This policy remained in force until the last year of the decade when it was discovered that merchandise inventory had been overemphasized, and a policy of inventory reduction was inaugurated. As commercial air transportation continues to become a more important part of the industry, a continued gradual reduction of merchandise inventory seems likely, although the revenue characteristics of operation activities will tend to check the effects of such a movement.

4. The industry has followed the policy of maintaining only a necessary minimum of current assets in the form of cash during normal periods. This policy was disregarded, however, during the latter part of the decade as is demonstrated in Chart No. XIII. Here again is emphasized the influence that abundant supplies of new capital funds have had upon the industry's financial structure. A return to the pre-financial expansion period policy is strongly evidenced by the decline of this cash

CHART No. XIII

CASH IN BANK AND ON HAND
Reduced to Percentages
of Total Assets



Source: Compiled from Appendix.

position following June, 1929, when the percentage of cash and call loans again reached a level below 10 per cent of total assets. The important complications suggested by this downward movement in the position of cash have been one of the factors entering into the questions raised in the statement of conclusions (1) and (2) above. Supplementary analysis has added further weight to these questions.

CHAPTER VI

Policies Shown by Other Aspects of the Industry's Earning Power

Development of the analysis thus far has revealed financial policies followed by the aviation industry relative to the sources of capital funds, their characteristics and methods of acquisition; the division of these funds among the assets of the industry's four branches; and the amounts maintained within the several important divisions of working capital. Throughout this treatment serious questions regarding the results of these financial policies have presented themselves. Several aspects of the industry's financial activities should be examined before a final consideration of these questions can be presented. Since all financial policies are presumably guided by pecuniary motives, it is essential to interpret them in the light of the productiveness of activities and the earning power of the financial structure involved. A final consideration of the inquiry, therefore, is one relative to the aspects of earning power that thus far have not been developed. What has actually been the earning power of the industry? Have returns to investors in aviation securities been sufficient? Will the industry be able to obtain adequate funds in the future? These questions are surely among the most serious, for with an inadequate supply of future capital funds normal expansion and development cannot take place. And the only way to insure the forthcoming of such funds is by affording fair returns upon the public's present interest in the industry.

Several financial policies dealing with the profitableness of the industry have already been disclosed throughout the study. In chapters developing policies of capital acquisition, with particular reference to suplus as a source of capital funds, it has been necessary to refer to the profits of the several groups, and in turn to the operations of individual enterprises. It is equally true that the policies followed in the division of capital funds among the assets, and those followed in the maintenance of working capital items undertaken in Chapters IV and V have been closely allied with those relative to earning power.

These interdependencies of policies have become more clearly discernible as the analysis has continued. The industry has been found to have two major sources of funds,—(1) an external source composed almost wholly in stock investors, and to a minor degree in borrowings; and (2) an internal source in reinvested earnings. But it cannot secure capital funds from reinvested earnings unless these funds are earned. Whether they can be earned, in turn, depends upon the result of many conditions. In part, it is determined by the effectiveness in the use of funds employed, in the maintenance of a proper relationship among the various items of the balance sheet; and in the adoption of sound expansion and investment policies. Whether or not these policies may be carried out depends in a large measure upon the financial structure of the industry, and upon the degree to which internal and external forces influence financial and physical activities. Finally, the degree to which the major source of capital funds continues to remain that major source and affords additional capital funds as growth and expansion warrants, depends upon the resultant of forces which is the multitude of other financial, operating, sales and credit policies, that, when put together, make the industry's earning power what it has been and what it promises to be in the future.

There are several types of data that may be employed to discover these other important policies shown by the industry's earning power. The relationships of net profits on sales and operations to total assets, and of net income to net worth should present policies directly influenced by the degree of earnings. However, since income data have not been complete in covering all the companies included,[1] the *trend* rather than the degree of movement should be the factor interpreted. This analysis should, furthermore, reveal the policies as to dividend payments and the class of stock issued, as suggested in Chapter II. Finally, a policy resulting in part from these last two conditions may be discovered from an analysis of the relative trends in net worth to capital stock, for if the policy of allowing net worth to depreciate in terms of capital stock issued is permitted, such would

[1] See notes attached to Balance Sheet Item Statements, Appendix O, p. 190.

signify a weakening of the financial structure entailing higher financing costs, and threatening a future curtailment of funds when they are needed.

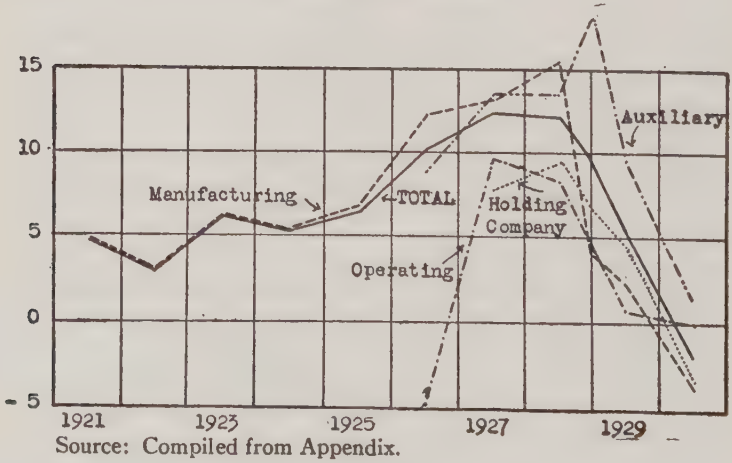
Since many of the policies relative to the industry's earning power have been suggested heretofore in carrying out the individual analyses of the various branches of the industry, our purpose will be best served by a treatment of the groups simultaneously in an attempt to discover the several policies which the above data disclose.

Policies Demonstrated by Earnings.—A fair indication of the trend of the industry's earning power can be obtained through an analysis of the shifting relationship between net profits on sales and total assets, as is presented in Chart No. XIV. The general trend as here indicated, both for each branch and for the industry as a whole was upward throughout the first seven years of the decade, to be followed by a rapid downward movement during the last three years of the period. While it is important to remember that the unavailability of complete earnings and profits data has made a quantitative analysis of this relationship

CHART XIV

RATIO OF NET PROFITS ON SALES TO TOTAL ASSETS

Per Cent — Expressed as Percentages



Source: Compiled from Appendix.

impossible, the trend in general, nevertheless, accurately portrays the earning power of the industry based upon profits from sales and operations as will be shown presently.

The manufacturing group occupies the most important position during the early years. A gradual recovery from the general business depression experienced at the opening of the decade, and from the discouraging market conditions within the aviation industry resulting from the termination of the government's war demands, caused a gradual increase in the percentage net profits on sales bore to total assets during the years between 1921 and 1925.

In 1926 two new branches entered into this grouping. From this date until June, 1929 the industry developed at its most rapid rate. Operations and sales increased phenomenally and the percentage of profits on sales continued to rise until greatly augmented sums of total assets caused the trend to slope downward after 1927. The position remained relatively favorable, nevertheless, until after June, 1929, when each branch experienced a precipitous fall in net profits on sales and operations. This decrease occurred in opposition to a deterrent influence caused by a shrinkage of total assets undergone by all branches (except the operating branch) during the last two periods ended December 31, 1929 and 1930.[2] The manufacturing and auxiliary branches experienced a continued rise in the percentage of net profits during the twelve and eighteen months following December 1927, but their importance within the total industry was decreasing, and their favorable showing was not sufficient to offset the less favorable showings of the holding company[3] and operating groups.

The policy revealed by the downward movement of the percentage of profits from June, 1929 is one applicable to each branch of the industry. In attempting to interpret this weakening position of net profits to total assets it is important to make

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[2] Total assets for all groups decreased from $333,287,398 at Dec. 31, 1929 to $299,330,886 at the same date one year later. Total net profits on sales for all groups (slightly incomplete, see notes under Total figures, Appendix O, p. 190) dropped during the same period from $17,501,493 to a *loss* of $5,562,327.

allowances for the effect of increased earnings from investments, call loans, and marketable security holdings that the analysis has already shown took place, thus making the industry less dependent upon earnings from operations and sales alone. It is also important to make allowance for the incomplete earnings data upon which the study is based. This latter qualification, however, would seem to make the earnings condition of the industry even more serious than it here appears to be, for all the industries upon which this income information was available have reported a combined net loss from sales and operations for the year ended December 31, 1930 of $5,562,327, and it is reasonable to assume that in a period when the bulk of the industry is losing rather than gaining from sales operations, any companies having a favorable showing would hasten to make such reports public.[4] We may therefore consider that the companies not included in this interpretation have little to offer which would improve the record.

The policy regarding the credit standing and financial structure of the industry may be further demonstrated by an examination of the shifting relationship between net income and net worth. There is no safer and surer way to damage a financial structure and dissipate its net worth than for an enterprise to continue to operate upon a non-profit making basis. The following chart (No. XV) sets forth the percentage of net income to net worth and emphasizes the serious condition each group of the industry has either allowed itself to enter, or has been forced into. The business depression which began during the latter half of 1929 has obviously had an unfavorable effect upon the aviation industry, as well as upon practically all other industries. Were it not for the presence of certain conditions that the study thus far has demonstrated to exist within this industry, these downward movements of important balance sheet relationships might be attributed largely to the influence of the business depression

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[3] Sales figures for enterprises within the holding company branch previous to those shown by the chart have not been made available.

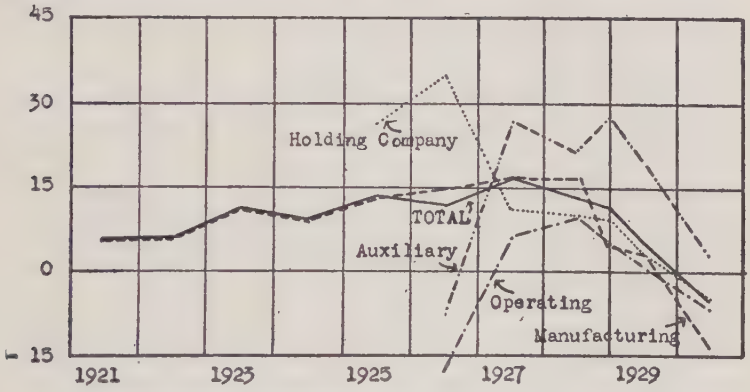
[4] The profits on sales and operations cover such activities for all companies included within this study, except Pan-American Airways Corp. and Kinner Airplane and Motor Corp., Ltd.

and might therefore be dismissed with little consternation. For they would have appeared principally because of external conditions, and would likewise be expected to disappear with a recovery of the economic structure.

CHART No. XV

NET INCOME REDUCED TO PERCENTAGES OF NET WORTH

Individual Groups Compared to Total of All Groups



Source: Compiled from Appendix.
Note: June, 1929 income has been doubled to reduce to a yearly basis.

The situation faced by the industry, unfortunately, does not appear to be so simple. Throughout this inquiry definite internal policies have been found to be existing which have given rise to serious questions. The trend of the proportion between net worth further demonstrates the industry's policy of allowing a lack of income to threaten its credit strength. The movement, as the chart clearly indicates, was gradually upward until the latter years of the period. During 1928 and the first half of 1929, net income for all groups combined approximated 15 per cent of net worth. Current accounts that during this period were used in the call loan market and in the purchase of marketable securities were gradually placed in fixed investments during the remaining eighteen months of the period. Together with the more important trends of decreased sales and unprofitable

activities, this movement led to a large drop in the percentage of net income to net worth. The decline becomes even more significant when it is realized that total net worth covering all branches decreased from $252,238,192 at December, 1929 to $222,613,273 at the same date in 1930.[5] The question suggested here is one considering how an industry can protect (or regain) its credit position which has been threatened by inadequate earnings and an actual shrinkage of net worth.

Dividend and Stock Issue Policy.—The policies suggested in consideration of the industry's earning power further involve policies relative to dividend payments and stock issuances. If the industry can show no income carried over to surplus, it is quite possible that it will show but little, if any, paid out in the form of dividends unless these payments are demanded because of the nature of securities issued. Since practically all capital funds, as was developed in Chapter II, are contributed by stockholders' investments, and none are secured through bond issues, and since net income earned by the industry has been very meager, and actually negative for the year ending December 31, 1930,[6] it would be unusual if consistent dividend payments for the industry as a whole had occurred. Dividends must be either earned before they can be paid, or the surplus account must have been built up during years of profitable operations and still remain large enough to withstand such additional withdrawals as unearned dividend payments might necessitate.

Having examined the policies demonstrated by the trends of net profits on sales and net income relative to net worth, it is not surprising to find that the industry has failed to make substantial payments of dividends. There are, however, notable exceptions to this statement. In six years from the date of the organization of Consolidated Aircraft Corporation its stockholders received cash dividends amounting to 3800 per cent of the original cost of their stock, or 28.7 per cent of the corporation's total earnings of $3,142,809.[7] Others that have shown dividend payments throughout most of the period following their organizations are those of

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[5] See balance sheet items for Total of All Groups, Appendix O. p. 190.

[6] Total net *loss* for all companies covered for period ended December 31, 1930 was $12,609,784. (See Appendix O, p. 190.)

[7] Compiled from Dividend Record of companies studied.

the Curtiss, Wright, Douglas, Alexander, Western Air, United Aircraft, Irving, Aero Supply, and the Bendix companies. Still several other companies included in the study have joined in this action occasionally, but approximately 95 per cent of the dividends paid has come from the ten companies listed above.[8]

The result of this policy is suggested by the comparative figures presented in Table No. XX. Several significant conditions are shown therein. In the first place scarcely more than a fourth of the companies under survey appear as having distributed dividends during the last three years of the decade. Even during the period of greatest activity and largest earnings, only seven out of twenty-four companies declared dividends. This lends emphasis to the statement that the companies within the industry have failed to follow a policy of dividend payment.

Moreover, a condition more important than the one demonstrating the small number of companies passing out dividends is one concerning the *size* of the dividends paid. It would not be unusual to find a weak showing during the early years of the decade, for the industry was young, and the war period had disorganized both production and consumption. During these years, however, dividend payments kept a fairly steady pace with earnings and investments, and the percentage passed out to stockholders during the period previous to 1928 strengthened the credit standing of the industry. At the same time the average dividend returns of between 5.4 per cent and 7.5 per cent of total capital that the above table shows were returned to investors did much in the way of encouraging investments in this field. Increasing earnings and better dividends resulted in the encouragement of greater competition and more capital flotations heretofore discussed. When this capital expansion did take place, it was buoyed up by the speculative frenzy then ruling the capital markets. The consequence is strongly suggested by the movement of the percentage which indicates the return upon total capital represented by dividend payments. This percentage dropped to the position where dividends were the equivalent to

[8] A few companies aside from the ten listed above, as the old Fokker Aircraft Corp., have distributed dividends occasionally, but not often enough to have established a record.

TABLE XX

COMPARISON OF DIVIDEND PAYMENTS TO EARNINGS AND TOTAL CAPITAL
1921–1930

YEAR	EARNINGS AND TOTAL CAPITAL				DIVIDEND PAYMENTS		
	NO. COS.	NET EARNINGS	NET INCOME	TOTAL CAPITAL	NO. COS.	AMOUNT PAID	PER CENT OF TOTAL DIV. PAYMTS. TO TOTAL CAPITAL
1921	3	$562,357*	$384,153*	$10,034,684	1	$112,195	1.1
1922	2	418,937	539,601	14,424,042	1	224,390	1.6
1923	3	892,481	642,485	7,887,004	1	243,140	3.1
1924	3	861,091	588,913	7,139,523	2	400,776	5.6
1925	4	1,210,427	961,455	8,080,014	3	456,318	5.6
1926	9	1,701,158*	1,373,094*	13,001,828	4	699,674	5.4
1927	13	3,188,264*	3,006,171*	21,807,797	7	1,641,976	7.5
1928	24	17,510,813*	15,257,389	125,741,625	7	3,334,389	2.7
1929	25	22,677,433*	14,798,839*	274,466,312	7	5,137,592	1.9
1930	24	−4,831,600*	−12,609,784*	236,668,577	5	4,563,686	1.9

* See notes attached to tables in Appendix.

Note: Earnings and total capital taken from balance sheet items for Total—All Groups, Appendix 0, page 190. Dividend payments compiled from dividend records of companies studied.

only 2.7 per cent of total capital in 1928, 1.9 per cent in 1929, and again, 1.9 per cent in 1930.

While these returns to investors have included all branches of the industry, they indicate even a more serious condition when apportioned to the several branches. Determination of the source of the dividends reveals the fact that 66.9 per cent of earnings paid as dividends in 1929, and 84.7 per cent in 1930 were paid by members of the auxiliary group, allowing the remaining one-third in 1929 and one-sixth in 1930 to be contributed by the other three branches of the industry combined. This large proportion of payments thus came from one branch which composed only a fourth of the total assets of the industry and a still smaller percentage of total capital.[9]

These conditions lend considerable weight to previous conclusions. The policy of diversification is still further encouraged when it is realized that all of the dividend payments taking place within the auxiliary group came from three companies, two of which participate in the production of diversified products. With the exception of the Irving Air Chute Company, all other auxiliary companies (the two airport companies and the Curtiss auxiliary group) have engaged in special fields of aviation activity, resulting in relatively large deficits. This condition, therefore, makes the dividend contribution of this group center around the Aero Supply, Bendix and Irving companies. Each of these enterprises has consistently maintained a favorable earning record throughout the years 1927–1930 with the exception of the one year (1930) that the Aero Supply Manufacturing Company met dividend payments out of surplus funds.[10]

Another financial policy closely allied with the one of dividend payments is that of stock issue. Preceding analysis has demonstrated that practically all capital funds have been obtained through stock issues. Further inquiry into the type of these securities shows that with but eight individual exceptions they

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[9] Auxiliary Branch compared to Total:

	1926	1927	1928	1929	1930
Per cent of auxiliary earn. paid as div. to Total	8.7	49.4	24.4	66.9	84.7
Per cent of auxiliary total capital to Total....	2.9	14.6	12.2	15.7	15.3
Per cent of auxiliary total assets to Total.....	2.6	27.5	18.6	24.4	25.0

[10] To the amount of $23,352.

are common stock certificates of no par value.[11] A comparison of the total amount of no par value stock issued by these thirty-two companies (twenty-five with duplications dropped) to the total capital stock outstanding, indicates that approximately 90 per cent of all stock issued has been that of no par common type.[12] Furthermore, the proportion that preference stock bears to total stock outstanding has been lowered over what it has been in the past. This is clearly indicated by actions on the part of companies such as Curtiss Aeroplane and Motor Co., Inc., Fokker Aircraft Corporation, Keystone Aircraft Corporation, National Air Transport, Aero Supply Manufacturing Co., Inc., and Bendix Aviation Coproration, all of which during the period of new or increased financing availed themselves of the opportunity to decrease or retire completely the preferred stock then outstanding and thus relieve themselves of the added financial obligation in meeting accumulated payments upon these securities when sufficient earnings were made. This action was carried on by a direct retirement of preferred stock through additional financing activities in which the company usually issued common stock direct to the stockholders in exchange for preferred certificates, or by an indirect retirement of the preferred certificates of subsidiary companies in exchange for parent company no par common stock certificates.

The difficulty in determining the details of financing new or additional issues has been suggested in Chapter II. It is significant, however, that each company included has made an

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[11] Exceptions are as follows: Curtiss-Wright Export Corp., together with $1,333,411.13 in no par common stock has $70,900 of 6 per cent cumulative preferred stock of $100 par value issued; Aero Supply Mfg. Co., Inc., in addition to 392,716 shares of Class B common stock has 20,428 shares Class A; United Aircraft has $20,936,444.48 in common (no par) plus $12,000,000 in 6 per cent cumulative preferred; Curtiss-Wright has 1,137,997 shares of Class A stock in addition to 6,299,271 shares of no par common; Alexander Industries, Inc. has $588,800 in 8 per cent cumulative preferred in addition to $726,512.25 of no par common stock; the Great Lakes Aircraft Corp. has 300,000 shares of preferred and 3,975,000 shares of no par Class B stock; the General Aviation Corp. (Fokker) has $5,125,651.22 of common no par and $721,325.00 of preferred; and the Curtiss-Reid Aircraft Co., Ltd. has only $165,000 in no par common stock against $1,500,000 in preferred.

[12] This percentage based upon comparison in which the value of certain stock not stated in the balance sheets has been calculated from offer or call prices.

affiliation with a stock exhchange,[13] and the securities of most companies have either been underwritten by or handled through brokerage houses.[14] The close affiliations between the aviation companies on the one hand and brokerage houses on the other, have been fully developed in Chapter II. When Wright Aeronautical Corporation made its last application to the New Stock Exchange for the listing of additional shares it was announced that Hayden Stone and Company, a member on the company's Board of Directors, had agreed (June 1, 1928) to underwrite the shares offered to stockholders at $100 per share.[15] Later James C. Willson and Company, interested in the promotion of certain aviation companies, underwrote without charge the 2,100,000 no par shares of common stock issued by the North American Aviation Coropration. Other financing has been made possible by means of a strategically organized interlocking directorate that recently has developed to include a tie between many aviation companies, financial and underwriting institutions, and important allied industries throughout the nation.[16]

A final characteristic of the industry's policy relating to stock issuances is to be noted in the manner in which warrants are issued with the securities themselves. In the case of thirteen of the thirty-two different companies studied certain options or purchase warrants have been issued. These warrants reserve for the holder the right to buy up certificates held in reserve at definite prices until a specified date. Many have been issued

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[13] Seven of the companies included in this study are listed upon the N. Y. Stock Exchange, twelve upon the N. Y. Curb Exchange, and the others upon the Chicago, Los Angeles, Detroit Exchanges, or the N. Y. Produce Exchange.

[14] As example, Waco and W. E. Hutton and Co,; Wright and Hayden Stone and Co.; National Air Transport and James C. Willson and Co.; Curtiss-Wright and Potter and Co.; North American and James C. Willson. Other houses such as Pynchon and Co. were interested in the marketing of aviation securities. (See full discussion of this policy in Chapter II, pp. 35–38.)

[15] See *N. Y. Stock Exchange Listing Application No. A-8024*, p. 2.

[16] For example, the 1930 statements show Graham B. Grosvenor as a directorate of The Aviation Corp., Pan-American Airways Corp., and Bendix Aviation Corp. Again, William B. Mayo was then a directorate of National Aviation Corp., Transcontinental Air Transport, United Aircraft and Transport, and Air Investors, Inc.; while C. M. Keys, former President of Curtiss-Wright Corp., directorate of Douglas Aircraft, National Aviation Corp., and Bendix Aviation Corp., was Chairman of the Board for Transcontinental Air Transport and President of North American Aviation Corp.

to bankers and others, which fact strongly suggests that this method of placing the stocks upon the market has been followed to a large extent. In every case the option price stands far above present market values of the stock, and unless the industry is able to greatly improve its credit condition, additional future funds will not be forthcoming through the exercise of the option rights now outstanding.

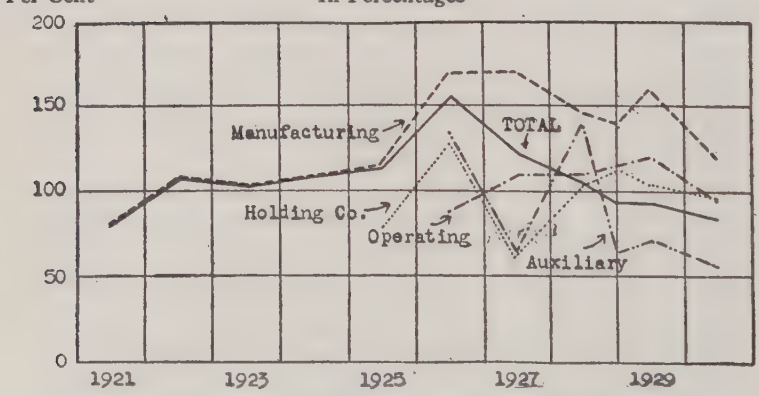
Financial Policy Shown by Trend of Net Worth Relative to Capital Stock.—The influence that the above dividend and earning policies have had may be observed in the trend of the relationship between net worth and capital stock shown in Chart No. XVI. During the period in which only a small amount of new capital stock was being added to the industry total net worth increased to a margin well over 100 per cent of capital stock outstanding. During this same period a substantial portion of surplus earnings were being reinvested within the industry,[17] and both the earning and dividend rates were strengthened.[18]

CHART No. XVI

COMPARISON OF GROUP RATIOS

Net Worth to Capital Stock*

In Percentages



Source: Compiled from Appendix. *Includes Capital Surplus.

[17] See Chart No. V, p.64.

[18] See Table No. XX, p. 144.

Starting at the end of 1927, however, the ratio for the total industry moved steadily downward from a position representing net worth as being equivalent to 150 per cent of capital stock, to one representing it as approximately 80 per cent of capital stock.

While the manufacturing group displays the strongest relative net worth to capital stock position, nevertheless its downward movement during the latter part of the decade follows closely that of the total for all groups combined. The holding company group suggests an improving position of net worth until June, 1929, when its trend is downward, ending December, 1930 slightly below 100 per cent. The most important period of this group's development, however, did not take place until 1928, so most weight must be placed upon the trend during the last two years of the decade. The operating group's position when compared with others is favorable, although heavy deficits sustained during the final period led to a downward movement. Finally, within the auxiliary group most unsteadiness has been displayed. This great apparent instability has been due to two different influences. One was the entrance of the Bendix Aviation Corporation with a large patents and goodwill item that tended to depress net worth. This influence has been recognized in the interpretation. The more important influence, however, was that of unusually heavy deficits suffered by five members of the group engaged in specialties. The losses tended to further decrease net worth below the capital stock issued and outstanding, and increased issuance of capital stock added still further to the abnormally low margin thus produced.

Summary of Policies Demonstrated by the Industry's Earning Power.—1. The industry as whole has not followed the policy of maintaining dividend payments upon stock outstanding. Such action may have resulted from several causes. In the first place, the newness of the industry may have made necessary the forfeiture of dividend payments until it becomes established upon an earning basis. Again, the general business depression may have caused the decrease that Table No. XX presents, thus making it impossible for the industry to meet such obligations as a normal return upon investment would create. Finally, it may be that this weakened earning power has resulted from

a combination of financial policies followed by the industry and is thus to be questionably viewed because of the impairment of future funds that may be needed as the industry expands.

The first two explanations do not demand serious treatment. If the industry is young, then future development should place its financial structure upon a productive basis, and though present stockholders are forced to sacrifice, it is possible that they will be adequately rewarded in the future. But it appears that the industry is not young, and previous inquiry as to the sources of dividends has revealed that from two-thirds to three-fourths of recent payments have been made by three relatively strongly diversified auxiliary companies. The manufacturing branch, which is the oldest and presumably the best established, has thereby contributed only a small portion of these recent payments to stockholders. Furthermore, production capacities have expanded so rapidly that present equipment is capable of producing many times more goods than the market can absorb.[19]

The second explanation dealing with the effect of the general business depression must be fully recognized in the interpretation of the dividend records. This external force has had a far-reaching effect upon the industry, and has brought on much loss that normally would not have been experienced. Yet it must be recognized that the same factors at work which caused the depression throughout other industries have had heavy influences upon the aviation industry as well. It has been clearly developed thus far that easy money and credit conditions prevailing in all fields during 1928 and the first half of 1929 had a most damaging effect upon aviation enterprises. This difficulty has appeared to have taken the form of an unstable and unbalanced financial structure produced by too large a supply of capital funds, thereby making it impossible for the industry to produce a fair return upon its present investment. Table No. XX presents the 1930 total capital of the industry at $236,668,577. The total capitalization of the industry has been conservatively estimated in the introductory chapter at approximately $300,000,000.[20] If the year

[19] This statement appears to be conservative in the light of reports from many companies. Kinner Aeroplane and Motor Co., Ltd., for example, reported that at the close of 1930 it was operating at only 3 per cent capacity. (From reports filed with N. Y. Produce Exchange.)

[20] Chapter I, p. 19 (note).

of greatest total earnings (1929 with total earnings of $22,677,-433) be selected as representative of what the industry might do in normal times, these earnings become only 9.5 per cent of the industry's 1930 total capital, and only 7.5 per cent of its total capitalization. One may well inquire if such earnings may be sufficient to meet all further write-offs, build up an adequate surplus account that has been thus far neglected, and in addition return to the investor enough to assure an adequate supply of working and fixed capital funds which the future may demand.

2. The industry has followed the policy of relieving itself of preferred stock dividend payments, and within the past three years has secured practically all funds from the issuance of no par common stock certificates. Former issues of preferred stock have been gradually retired either by financing and refinancing activities, or by the retirement of such certificates upon acquisition of subsidiary companies.

3. Methods of financing have been carried on largely through banking or brokerage house connections. Interlocking directorates and the issuance of purchase warrants have heretofore aided in marketing securities. Practically no new financing, however, has been carried on since the stock market collapse, and the low prices at which aviation stocks now sell make this method of securing new funds impossible at present. Failure to show earnings has made the further securing of funds impractical. While such funds are not yet needed, present financial policies relative to dividend payments and the class of stock issued cannot avoid influencing the ease or difficulty with which future funds may be acquired.

4. The conclusion to be reached as to the industry's policy of protecting an adequate margin of net worth over capital stock must be one involving weighty questions similar to those already suggested. Whether it has been intentional or not, it is quite clear that the industry has followed financial activities which during the last five years have resulted in a weakening position of net worth. The present situation must now be considered serious in the light of other policies, and in view of the possible future needs for capital that may be anticipated as development takes place.

CHAPTER VII

Conclusions

The analysis has disclosed the principal financial policies in the aviation industry, and thus enables a consideration of the major financial problem with which it is faced. This concluding chapter, therefore, will (1) briefly summarize the policies that have been developed throughout the study; (2) bring together the questions that such policies have suggested; (3) postulate the major financial problem of the industry; and finally, (4) consider ways in which this problem may be met. Since any postulation of the industry's problem, as well as a suggested solution, must be stated in general terms applicable to the industry as a whole, the proposals that this chapter may set forth are not intended to to meet the difficulties of each individual enterprise within the industry. Individual problems must be met with narrow or wide modifications of the solution that the whole industry may need, and therefore the degree of applicability to the individual company that such proposals as offered may afford will be dependent upon the degree to which that company's own financial policies have been similar to those of the whole industry as set forth throughout the study. But since the financial policies of the whole industry have been determined by the net total of each enterprise within the industry, it must be that the problem herein presented, as well as the possible solution offered, accurately describes the financial policies and difficulties of the average aviation company, and thus points toward a remedy.

Summary of Financial Policies in the Aviation Industry.—The financial policies that have been revealed throughout preceding chapters may be drawn together into four general groups. One group of policies has resulted in the course of action followed by the industry in obtaining capital funds. Certain financial institutions have been important agencies in the acquisition of these funds. Banks have maintained close affiliations with leading enterprises, and have played an important part in the formation of the capital structure. Brokerage houses have been successful

in marketing large blocks of securities. The aviation investment trusts have aided the industry in this acquisition, and in some instances have proven to be a minor source of capital.

The industry has followed the policy of returning a substantial amount of earnings through capital surplus when profits permitted. Operations during the past three years, however, have not allowed the continuance of such a policy, for large decreases in earnings and actual deficits have not only checked the policy of reinvesting earnings but have actually led to a complete absorption of the total surplus account and the appearance of a total surplus deficit.

Another policy bearing upon the acquisition of capital funds has been that of obtaining a large and increasing share of capital through stock issuances. There is no funded debt within the industry, and short-term borrowings have been negligible. The industry, though not entirely new, involves too much uncertainty as to the possibility of being able to meet fixed interest payments and the retirement of bonds on specified dates to justify the policy of obtaining a portion of capital funds through funded debt. Furthermore, the investor, also, has influenced this policy by not being willing to loan money to the industry at normal market rates, even though the offering of bonds might have been at a price low enough to insure a yield commensurate with the risk involved. Such would doubtless have led to defaults, and the investor has rather chosen to become owner of the industry and thereby stand the opportunity of large gains from successful developments.

It is extremely significant, also, that practically all of these new capital funds were drawn into the industry during the relatively short period between the first part of 1928 and the middle of 1929. The phenomenal acquisition of new capital occurred coincident with the most active period of security speculation on record.

A second group of financial policies centers around the industry's regard for the disposition of capital funds within the assets. Current assets have been maintained at a high level until the past two years, when a policy of redistribution appears to have been inaugurated. Large amounts of cash and other current

asset accounts acquired easily and rapidly have been absorbed gradually. While some funds have been cancelled by heavy losses sustained in 1929 and 1930, nevertheless most of these current funds are being directed into forms of fixed investments as apparent opportunities have arisen. This physical expansion of property and equipment, together with a recent contraction of net worth due to heavy losses, has resulted in a policy allowing a reduction in the margin of net worth over property and equipment. These policies have suggested the question as to whether the direction of an increasing amount of current funds into fixed assets has been warranted by present or prospective earnings, or whether it may have led to overexpansion.

Further concern has been added to the result of such conditions by a development of the financial policies reflected through the efficiency with which net and gross working capital have been employed. While here financial policies appeared less definite and more widely varying between the several groups than disclosed in other considerations, still certain lines of action appeared certain for the industry as a whole. The current ratio has been weakening, but is still considerably above the conventional two to one proportion. However, even though this ratio is still strong, thus demonstrating adequate liquidity of current liabilities, certain financial policies have resulted in its more rapid weakening when compared to fixed assets. Does this mean then more productive capacities? More fixed assets within the industry mean greater depreciation costs and more fixed expenses. This trend must be viewed with apprehension, for as the inquiry has disclosed present productive equipment is now operating at only a fraction of its capacity. Policies leading to a further expansion program would therefore appear only to add to the financial plight the industry is now facing.

The policy of increasing inventory has also been disclosed. This has caused heavy losses to be suffered by producers, for the obsolescence rate on aircraft equipment is high, since mechanical and other improvements are constantly being made. The losses sustained by the building up of large inventory supplies in 1929 were further augmented by the necessity of disposing of such supplies upon a deadened market and in the face of falling prices.

Another policy disclosed in the analysis of the relative position of working capital was one concerning the cash and call loan account. The normal cash policy of the industry is to maintain only a minimum, but this was disregarded during the months of intensive speculation. Such action, however, was made possible by the acquisition of capital funds from the market which could not be readily placed, and which, it has been since proven, were in a large measure not needed. This gives rise to another phase of the industry's problem, soon to be developed.

Policies relative to the industry's earning power and credit position compose a final group. Few dividends have been paid throughout the decade. Especially has this been true during the two years 1929 and 1930, when only 1.9 per cent on total capital was paid annually to investors. Net earnings for the industry would have to approximate the 1929 total net sales figure ($87,000,000)* itself to allow the wipe-out of the industry's present surplus deficit ($11,179,241), and to create a 10 per cent surplus and still allow for a 15 per cent return upon total capitalization ($300,000,000) in the form of dividend payments.

This inadequate earning power policy is reflected in the types of securities outstanding. The policy of issuing no par common stock is gaining in strength, and at present approximately 90 per cent of all aviation securities outstanding (dollar book value) are of this type of certificate. The small amounts of preferred stock that still remain outstanding are being gradually retired by exchange for no par certificates and by new financing activities in which the proportion of this type of stock is further increased over preferred types. In this way the industry is releasing itself from any obligation of dividend payments which preferred certificates might necessitate upon the showing of net earnings.

The actual placement of these stocks into the hands of the investors has been made possible by two additional methods. One has been a listing of new issues upon a stock exchange, in which case no underwriting has been necessary. The second has

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* Incomplete. Does not include auxiliary branch and two other individual companies. (See Appendix O, p. 190.)

been an actual underwriting of the securities by some brokerage house or banking institution interested in the promotion of the industry. The latter service has sometimes been paid for in cash, but often the underwriting has been undertaken in consideration of certain purchase options giving the holder the right of stock purchase before a specified date at a set price.

These financial policies have allowed net worth to fall below capital stock outstanding, and it is within these conditions that the major problem of the industry is to be found.

1. *The Problem*

Aspects of the Problem.—That the aviation industry is confronted with problems other than those of a financial nature, must be generally admitted. Important difficulties in mechanics are constantly being confronted. Many of these problems, such as safety, speed in flight and in landing, and efficiency of motor power have a strong indirect bearing upon present operating costs and future development. Again, there has arisen within the past decade difficulties involving the legal aspect of the industry. The uniformity of aeronautical law among the several states of the nation, and the status of the commercial operator as a common carrier are examples of legal problems which have aroused much discussion throughout the nation, as may be witnessed by recent conventions in Washington and elsewhere. Furthermore, the influence that the general business depression has had upon the industry has already been suggested, and must be fully recognized in any statement of the industry's own financial problem. It is important to keep in mind the relationships that these other problems bear to the major financial problem, for any possible solution that may be ventured to meet a financial problem will depend, in its success, upon the extent to which these other problems are finally met.

The present inquiry, however, has been bound to a discovery of the major *financial* problem with which the aviation industry is now faced. Having made recognition of the interrelationship between this and other problems, we may now turn to a consideration of the phases of the financial problem, thus enabling its definite postulation in the light of its several aspects.

Easy money conditions, together with a favorable psychology on the part of the investing public, allowed a too rapid financial expansion of the industry between the first part of 1928 and the latter part of 1929. The result of this overcapitalization has been overexpansion within the industry, as is clearly demonstrated by idle planes, machines, and plants, and by idle current asset funds. While a continued trend toward larger fixed investments has been evident since this rapid expansion took place, still present and prospective market conditions, as will soon be pointed out, have not justified this expansion. This circumstance thus added weight to the difficulty that the industry was facing.

Idle machines and equipment have added heavy depreciation and obsolescence costs to all branches of the industry. The financial condition of the industry has been further weakened by relatively heavy operating and maintenance expenses brought on by poor management and a disregard for sound financial policies. While it is true there are to be found financial leaders within the aviation industry, it is equally true that many officers have gained their standings because they were good pilots, and not because they were successful entrepreneurs. It would appear that much of the unwise choice of adhering to unsound financial policies has resulted from a lack of shrewd managerial ability and of conservative promoting methods which have been outstanding characteristics of the industry.

The net result of this disregard of well founded financial policy is clearly demonstrated in the industry's earning power. Inadequate earnings have resulted in conditions which center around the major financial problem itself. One result of inadequate earning power has been a weakened credit condition. This is further emphasized by a withdrawal of capital funds as evidenced by a shift of the investment policy of aviation investment trusts away from the inclusion of aviation securities in their portfolios, and by the weakened demand for aviation securities as reflected through aviation security prices and volume of trading.

The most damaging effect of inadequate earnings, however, is to be found in the influence such a policy has upon the future supply of capital that may be drawn into the industry as possible future needs may require. While there has been no need for new

capital since the phenomenal acquisition ending in the third quarter of 1929, still it has been clearly developed throughout the present inquiry that were new capital funds needed today, the past and prospective future earning power of the industry would greatly hinder, or almost entirely prohibit, these funds from being obtained at normal costs. This situation becomes even more serious when one recognizes the need for future funds as being entirely possible, and probable as future progress takes place.

The Major Financial Problem Stated.—It is within these circumstances that the major financial problem of the aviation industry is to be found. While overcapitalization, overexpansion heavy depreciation and operating expenses, and inadequate earnings are the circumstances which have created the problem, and have fostered its developing seriousness, they are not the problem itself, and therefore must be carefully distinguished from it as such. These phases make possible a more definite understanding of the problem, but the major financial problem is to be thought of in the light of what should be done to meet these unfavorable conditions. Stated briefly then, the problem is: *How can the aviation industry be restored to a normal earning power basis?* For unless the industry can soon be placed upon an independent, economic foundation, both its credit standing and whole financial structure will be weakened to the point where necessary working and fixed capital funds cannot be obtained. The assurance of adequate future funds, then, is dependent upon the earning power of the industry, and this in turn, is dependent upon lower costs and greater efficiency, or more business per dollar of capitalization.

2. *Possible Methods of Meeting the Problem*

There are several important ways by which the industry might be restored to a normal earning power basis. While it is beyond the scope of this inquiry to establish definitely the proper solution by working out in complete detail a plan, and by demonstrating its application to the industry's present financial difficulties, it nevertheless is within the bounds of the purpose to

consider briefly the practicability of each solution, and thereby to determine which would best meet the problem by suggesting in a more general way the probable effect of its application.

Increasing Earning Power by Greater Indirect Subsidies.—One possible way of restoring the aviation industry to a normal earning power basis would be to increase indirect subsidies now being extended through activities supported by the government. This may be done in three ways. One is through direct purchases of aircraft and parts from army and navy appropriations. For the past twenty years these departments of the federal government have made heavy demands upon the industry for its product. Since the close of the war period these purchases have been relatively stable and profitable to the manufacturing branch of the industry.[1] An examination of the 1930 production reveals the fact that 23 per cent of the total number of airplanes delivered, representing 46 per cent of the total output value, went for military purposes, leaving 77 per cent of the number of units and 54 per cent of the total value for commercial consumption.[2] Military demands further took 48 per cent of the total number of engines produced in 1930, representing 62 per cent of the total value of engines.[3]

In this connection it is significant that with but few exceptions the producers doing all or most of their business in the fulfillment of government contracts have been those which have enjoyed the largest earnings throughout their respective periods of production.[4] Boeing Airplane Company, Douglas Aircraft Corporation, Chance Vought Corporation and Consolidated Aircraft Corporation are examples of enterprises built up almost entirely from government demands. Each of these companies has been able to show an earning record far above that of the average producer.

While government appropriations for the purchase of military aircraft and supplies have constantly increased during the past

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[1] See Consumption of Airplanes by Army and Navy, 1909–1930, Appendix E, p. 182.

[2] *Airway Age*, January, 1931, p. 78.

[3] *Ibid.*

[4] See list of companies supplying army and navy demands for engines, aircraft and parts, Appendices F to H, pp. 182–183.

decade, the present War Department air program is now reaching completion, and the future offers considerable uncertainties as to the size of forthcoming appropriations. Army appropriations for aviation in 1923–1924 were $12,426,000 while those for the navy were $14,647,174. The appropriations for these two military divisions of the government for the fiscal year 1931–1932 stand at $37,461,285 and $30,850,000 respectively.[5] While these figures indicate the amount spent for all types of aviation equipment and service, nevertheless they serve to indicate the increasing demands made upon the industry during the past decade. Figures of the Navy Department show appropriations for the fiscal year 1930–1931 of $12,326,100 for 236 planes alone,[6] representing approximately one-third of the total value of aircraft produced during 1930.

The future business coming to the industry from this government source, however, does not look promising. As suggested above, the miliatry aircraft development program is nearing completion.[7] Forthcoming demands will doubtless be more in the nature of replacements only, rather than of new equipment and replacements. It would appear, therefore, that branches producing equipment and parts will do well to hold to the total contracts now being awarded by the government, without looking forward to increasing appropriations. In fact, in view of the present federal administrative policy of paring down budgets in all branches of the government, it is even doubtful that the industry will be able to maintain, for the next few years at least, the present level of federal appropriations.

A second source of indirect subsidy is that of air mail appropriations. While the operating branch of the industry stands to profit indirectly from large appropriations for equipment through increased operating efficiencies ordinarily brought about through increased production, they profit directly from assistance afforded by air mail contracts. This aid must be viewed as a subsidy at

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[5] *Aircraft Yearbook*, 1931, Appendix.

[6] Navy Department, Washington, D. C. (Special communication).

[7] The present five-year government military program will terminate June 30, 1932. At this time the army will have 1,800 and the navy 1,000 useful planes.

present for air mail service revenue still falls considerably short of payments made to the carriers.

Government expenditures in this service have expanded considerably, coincident with the development that most companies within this branch of the industry have undergone. Annual appropriations for domestic airmail have increased from $100,000 in 1918, to $3,385,000 in 1926, and $18,000,000 for 1931. Appropriations already made for the year 1932 total $20,000,000.[8]

Whether the industry will be enabled to return to an earning power basis through the aid of this form of increased revenue, however, is exceedingly doubtful. Progress in earnings throughout the past has been encouraged more by this subsidy than may be hoped for in the future. Already Postmaster General Brown has sounded a note of warning to operators, to the effect that government aid cannot be maintained indefinitely, and the operators must place mail service upon a more nearly economic basis.[9] The result of this change in the policy regarding the degree to which the government will subsidize operators is clearly demonstrated in the mail contract rate revisions placed into effect in 1930. On only nine routes out of a total of thirty-four were rates increased over those of 1929, and on only one of these did the increases amount to as much as fifteen cents (average) per mile flown. On the contrary, on several routes the rate was cut approximately in half,[10] and on the remaining (all except on two routes where rates remained unchanged) less serious cuts were made. It does not appear likely, therefore, that the industry will be enabled to increase its earning power through more substantial government mail contract appropriations.

The third main source of indirect government aid is that received through the construction and maintenance of the federal airways system. In the four years preceding January 1,

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[8] See list of appropriations by years 1918–1932, Appendix C, p. 181.

[9] See statement issued by Postmaster General Brown at the time of the conference of mail contractors held in Washington, in the spring of 1930. Also see basis for contract rate revision in the Watres Act.

[10] As, for example, Colonial Route No. 1 was reduced from an average of $2.95 per mile in 1929 to $1.24 in 1930; Western Air Express on Route No. 4 from $3.17 to $1.71; and Ball on Route No. 11 from $2.07 to .90. (See list of operators and amount paid each, Appendix JJ, p. 229.)

1931, the federal government had spent appoximately $8,500,000 through the Department of Commerce, Aeronautics Branch, in constructing airways throughout the country.[11] In addition to this capital investment figure, the Department spends approximately $5,000,000 annually for the maintenance of the federal airways system. What the policy of the government will be toward further development is difficult to say. The present aid received is substantial, and considerably reduces the operating costs of individual commerical carriers, but it is quite obvious that the development will be limited to one creating a trunk line system only. Since this program, as well as that of municipal establishment of airports, is rapidly nearing completion no further aid other than continued maintenance can be foreseen. At best, this type of financial assistance directly helps but one branch of aviation, and while such a policy is commendable, it cannot be relied upon to aid materially in increasing earnings for the whole industry.

There are two main reasons why indirect government aid cannot be accepted as a method of restoring the industry to a normal earning power basis. One is that such aid cannot be relied upon. Already there appear definite curtailments in federal appropriations benefiting the industry, but such appropriations would have to be equal to several times their present amounts to support the industry's present capitalization.

In the second place, full government subsidy is not economically justificable. The industry, to be built upon a sound financial basis, must meet all costs, overhead and operating, out of its revenue. Assurance of government aid encourages inefficiency and further disregard for sound financial policies.

Increased Earnings Through Internal Economies.—A second possible method of restoring the industry to a normal earning power basis would be obtained through the scaling down of operating and overhead expenses by means of consolidation through the elimination of the small producer and operator, and through other internal economies; and to insure more stable market conditions by means of a larger diversified field of oper-

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[11] *Air Commerce Bulletin*, February 2, 1931, p. 394.

ation. Evidences of such a movement are already apparent throughout all branches of the industry. The formation of holding companies, without exception, has carried with it the attempt on the part of the parent company to increase efficiency and thus to lower operating and overhead costs by means of production and operating concentration. This is well illustrated in the case of the Curtiss-Wright organization, where smaller subsidiary production plants have been abandoned, and the whole organization of the company has been simplified in an attempt to bring about greater internal economies, and advantages of increased production.[12]

This same movement can be found within the operating branch of the industry. At the time of the award of mail contracts for the central transcontinental route between New York and Los Angeles, the United States Post Office Department required an operating agreement between Transcontinental Air Transport, Inc., and Western Air Express Corporation, two bidders for this contract. As a result, Transcontinental and Western Air, Inc., was organized. This consolidation led to the abandonment of the maintenance of separate terminal facilities principally in Los Angeles where Western Air Express left an expensive field equipped with one of the best and most modern hangars in the country to use that already furnished by Transcontinental Air Transport at Grand Central Air Terminal, Glendale, Los Angeles. Such consolidations have also led to the conservation of flying equipment, as was previously suggested, and to the coordination of flying schedules producing a more valuable service to the public.

Greater diversification is also being adhered to within the various branches of the industry. In the carrying out of this policy the auxiliary companies are most advanced. Important

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[12] As, for example, the consolidation of the company's Buffalo and Paterson engine manufacturing activities at Paterson; the consolidation of the plane manufacturing activities of the Garden City and Kail St., Buffalo plants in the Kenmore St., Buffalo plant of the Curtiss Aero. and Motor Co.; and the consolidation of the Curtiss-Robertson Aircraft Co. with the Travel Air Manufacturing Co. into the Curtiss-Wright Airplane Co. with plants in Wichita and St. Louis. The activities of still another manufacturing subsidiary, the Moth Aircraft Co., have also been shifted from Lowell, Massachusetts to be centralized in St. Louis.

trends may be marked within other branches, however, as is indicated in the organization list. The Aviation Corporation has only recently divided its activities into two phases; one the operation of air transportation through American Airways, Inc., and the other the manufacture of "Pilgrim" planes and "Ranger" engines through American Airplane and Engine Corporation, both wholly owned subsidiaries.[13]

Such attempts to scale down costs in order to increase earnings and thus strengthen the financial condition of the industry are noteworthy, and must be recognized as a factor which, in time, should result in an improved earning power position. The movement has been badly needed, and has already raised the reputation of the industry. But there is still room for improvement here, and even though progress be marked during the coming years, it does not appear feasible to expect the industry to be returned to an earning power basis through internal economies or diversification alone. Suppose, for example, that the net earnings shown for the whole industry in the best year of its history (in terms of total dollars earned), which was 1929 ($22,677,433) could be increased 25 per cent by means of these internal economies of production and operation (to $27,000,000). Such net earnings computed as a 10 per cent return would support a capitalization of only $270,000,000 as compared to the present one of $300,000,000. If these internal economies could add 50 per cent to this peak net earnings year, the present capitalization of the industry would only be receiving an 11 per cent return in the form of net earnings.

The chances for such increases in net returns still diminish when an estimate upon net income is made. In 1929 the income available either for distribution as dividends or reinvestment as surplus of the industry (net income) was only 65 per cent of the total net earnings. Such returns capitalized at 10 per cent would support a capitalization of only about $150,000,000. If this income could be doubled by means of an internal economy and diversification program suggested above, still at 10 per cent the

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[13] Information taken from a communication dated Oct. 30, 1931 and signed by Ernest Stainton, Assistant Treasurer of The Aviation Corporation.

returns would barely support the present capitalization. Furthermore, a 10 per cent return in net income allowing for both a dividend distribution and a substantial reinvestment of earnings cannot be a sufficient return in view of the high risks entailed within the industry. While a policy leading toward greater economies in production and operation is highly commendable, such would seem inadequate, within itself, in returning the industry to an earning power basis.

Building Up a Market Which Will Support the Present Capitalization.—A third way by which it might be possible to restore the industry to a normal earning power basis would be to build up an adequate market for its products and services. With the recovery from general business depression, and with an expansion of consumption similar to that witnessed during the three years preceding December 31, 1929, it might be possible for the industry to grow into its present capital structure. If this be the case, then grave concern over the industry's future financial condition may be dismissed, for normal developments may be expected to place it upon a paying basis in time to insure sufficient capital funds as they are needed.

There are three phases of the industry's market for products and services. One is that which originates from government operations, a second is that which results from commercial aeronautical activities; the third originates from demands made by private individuals for aircraft and parts, and thereby influences all branches of the industry, with the possible exception of the operating group.

Since consideration of the possible increased demands from the federal government has already led to the conclusion that the industry, within the next few years, will do well to hold the present volume of business it receives from this source, with little hope for any appreciable increase, we may pass on to a brief examination of the possibilities offered by the remaining divisions of the market. For if these sources of demand can be materially increased in a relatively short period of time, then it may be possible for the increased earnings resulting from this increased volume of business to support the present financial structure of the industry and thus meet the problem for which a solution is sought.

Commercial aviation has made remarkable strides throughout the years since the first mail contract was awarded to private enterprise in 1926. During this time contract mail carried has increased from 377,206 pounds to 8,513,675 pounds,[14] while total mail revenue has increased from $765,549 to $20,015,969. Total passengers carried in 1928 numbered 49,713 and fares aggregated $599,059. During 1930 passengers numbered 417,505 while the total passenger revenue reached $5,761,151.

These figures are indeed impressive, and point encouragingly toward possible future expansion. The speed with which mail is dispatched across the continent today has brought great savings to national commerce. Securities, drafts, small shipments of valuable goods, and various other instruments and commodities can reach Los Angeles now within twenty-four hours after leaving New York. And it is equally true, as the figures representing the growth of passenger traffic indicate, that this new transportation agency is offering a remarkable saving of time to air travelers, at but little additional cost. Any agency that increases the speed of communication between economic and social groups has possibilities of increasing its position in a present day transportation system.

However, one must not lose sight of the fact that most of this progress has been made in the field of commercial air transportation, which is only one of several branches of the industry. While this branch offers indications of becoming the most important in the future, that time is not yet near enough to insure a definite improvement in the financial structure of the industry as a whole. Moreover, the operating branch is still receiving approximately 80 per cent of its total revenue from government mail contracts and is being heavily subsidized, for the revenue to the government in the form of postage falls far short of equaling contract payments to operators.

The phase of the problem which has greatest bearing upon the possibilities of a greatly increased market enabling increased earnings to support the present capital structure of the industry is that revealing the possibilities for increased consumption and

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[14] See Progress of Civil Aeronautics in the United States, Appendix N, p. 188.

services. In this connection we may further observe the equipment that is being used by this and by other commercial aviation agencies. In 1927 the airplanes in service and reserve of scheduled air transport operators numbered 128, valued at $1,838,462. These amounts have increased until at the close of 1930 operators reported 600 planes valued at $11,489,450.[15]

Recent consolidations and a more concentrated flow of traffic have lessened the operator's demand for new equipment. Such conditions have resulted in extending the operating equipment, and conservative estimates for replacement of equipment are placed at around 125 planes for 1930.[16] The prospects for a larger market gained through the operating branch, therefore, must rest entirely upon a hope for such an increase in traffic that new equipment will have to be purchased. But since no recent outstanding achievement in the field gives promise for other than the substantial growth of traffic indicated by the figures given above,[17] this phase of the industry's market can not be expected to yield increased returns sufficient to support the present capital structure. Rather will it do well to place itself upon a nearer-paying basis, by closer coordination of schedules and services with other transportation agencies, by the adoption of operating economies, and by the adherence to conservative financial policies.

There are, however, other phases of this market which might conceivably be expanded sufficiently to meet the industry's problem. Flying schools were reported in 1930 to have accounted for 5,324 planes,[18] approximately one-fourth of the total number licensed. But the inquiry has already discovered the plight of the aviation flying companies because of little demand for additional pilot training,[19] and much of the present equipment is doubtless standing idle. This potential demand, then, cannot be counted upon.

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[15] See Progress of Civil Aeronautics in the United States, Appendix N, p. 188.

[16] *Standard Trade and Securities*, Industrial Section, March 13, 1931, p. A-113.

[17] See Appendix N, p. 188, and preceding page.

[18] *Standard Trade and Securities*, Industrial Section, March 13, 1931, p. A-113.

[19] As, for example, Curtiss-Wright Flying Service, Inc. which recently was reported to have curtailed a large part of its training activities throughout the nation.

Other possible commercial markets are to be found in aerial photography, commercial explorations, and special duties such as crop dusting and grain sowing. Obviously these can offer little hope for improved conditions in the near future.

There still remains the possibility of developing private demand. While this potential market is the largest of any to be conceived, it has been, as was suggested in the introdutory chapter, greatly over-rated, and serious examination must prohibit its inclusion as a possible development which would aid in the industry's recovery under its present financial structure.

It would seem useless to more than suggest that difficulties such as safety, operating costs, piloting, and landing room are among the major problems outside of the financial that must be more effectively met before this field can be tapped. Even though changes in the industry occur rapidly, there appears to be nothing at present that could develop this source of demand soon enough to strengthen the industry's financial structure so that additional funds needed because of gradual expansion might be assured.[20]

Government Ownership and Regulation.—Federal ownership of the aviation industry does not appear to be a practical solution to the financial problem. Were the government to purchase the industry outright the purchase price would involve the capitalization principle, but at what rate? If this price were to be based upon the past record of earnings, original stockholders still holding certificates would be forced to lose heavily through depreciation of their original investments. Yet no stockholders would have strengthened assurance of adequate future earnings. While such action would result in a form of decapitalization, it would likewise place additional responsibility upon the federal administration to maintain successfully an adequate earning power. But such activities are contrary to federal policy and are viewed with unfavorable public opinion.

Government regulation seems almost equally futile. It bears repeating that the industry's major financial problem is

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[20] The 1930 total production of aircraft for all markets was 3,357 units, against 5,306 for 1929, and 4,346 for 1928. (See Production Table, Appendix I, p. 184.)

one of placing the industry upon an earning power basis. Government regulation would first have to abolish overcapitalization. How would this be accomplished? How would the government maintain the industry upon an earning power basis? It might, for instance, regulate future security issuances and thus physical expansion, but how would such regulation solve the *present* financial problem?

The aviation industry as conceived is made up of four branches. Each alike has been suffering from inadequate returns. Government regulation of railroads has not brought regulation of locomotive and railway equipment supply companies. What would government regulation of aviation signify? It is difficult to see how government regulation could be applied to other than the operators as common carriers. Obviously this branch of the industry is still too young and relatively unimportant for its own operations to correct the financial plight of the remaining three branches. That it may become so influential in the future is possible, but that it is not now is certain. At best, such developments involve a long time growth, and cannot be considered as contributing toward an immediate solution. If the degree of success attained in the regulation of railroads can be taken as an indication of what the future of government regulation might lead to in this new field, a serious question can well be raised as to whether this problem may ever be met in this manner.

Decapitalization and Financial Reorganization.—The impracticability of the foregoing solutions brings the study to the consideration of a final way in which the aviation industry may be restored to an earning power basis. While there is some chance for improvement of the industry's financial condition through the above methods, the process of decapitalization and complete financial reorganization seems to offer the most practical solution to this financial problem. It is possible to examine more closely the three steps that this solution involves.

In the first place, the industry must undergo a complete revaluation of inventories, physical properties, goodwill and fixed investments, and must make all extraordinary write-offs that this action may reveal to be necessary. Approximately 95 per cent of the total capital stock of the industry was issued

after January 1, 1928. Funds placed into securities and in physical properties were invested during inflated prices. The result has been unusually heavy depreciation, and it is quite probable that market values will not equal cost price for many years. At November 30, 1929, the Detroit Aircraft Corporation carried $4,633,244.31 or 38 per cent of its total assets on its books in the form of "patents, trade marks, copyrights and goodwill." North American Aviation, on December 31, 1930, carried marketable securities of aviation companies and allied enterprises at a total cost of $15,269,186.24. These cases serve to emphasize the necessity for the placement of the industry's assets upon a book value basis that approximates the present low price level.

Some enterprises within the industry have realized this need, and have already adopted a deflation policy. By the close of 1930 such companies as Aviation Corporation, Curtiss-Wright, and Fairchild underwent relatively heavy extra write-offs in recognition of the decreased values of certain assets.[21] As has been previously suggested, this policy tended to augment the poor financial showings made by the industry during the past year, but its completion within each enterprise seems necessary before an actual earning basis may be reached.

A second step in the application of decapitalization must be the retirement of the surplus amount of stock outstanding that represents the amount of overcapitalization within the industry. Since the major financial problem is one of returning the industry to an earning power basis, a scaling down of assets to their market worth will not in itself permit an adequate return to investors. These decreased assets must be met by similar reduction in capitalization as measured by stock outstanding in order that the industry's earnings in the future (both near and more distant) may afford an adequate return to the investor.

Let us suppose a 10 per cent return is adequate to insure necessary funds for the industry, and that an investor holds ten

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[21] The amounts of these write-offs were $1,462,903.80, $2,670,042.42 and $886,310.00 respectively. Among write-offs of a somewhat different nature was one of $1,091,402.19 representing patents, patent rights and other intangible subsidiary companies written off by United Aircraft and Transport Corp. (See discussions of these companies in Chapter III particularly.)

shares of an aviation company's stock for which he has paid $10. We may further assume that the company's earnings available for distribution amount to, as nearly as can be determined, an average of fifty cents per share over a period of time. This investor's return is only 5 per cent on the average, therefore, which has been assumed to be below the necessary yield to insure adequate capital fund. Obviously, then, there exists a form of overcapitalization within this industry (see note 34, p. 19 for concept as here used). The investor's necessary return per share outstanding could be obtained, however, if only half the present number of shares were outstanding. A retirement of these surplus shares representing no real physical value would greatly strengthen the industry's credit standing by thus placing it upon an earning power basis.

This procedure may be further illustrated by direct application to the aviation industry. The industry's present capitalization as measured by the actual amount contributed by investors has been estimated at approximately $300,000,000.[22] Let us assume that the investor would consider an average yield of 8 per cent on his investment as adequate for the risk involved, and that, therefore, the industry must pay on the average a return equivalent to 8 per cent to keep adequate funds available. If we may liberally estimate the average net income of the industry available for distribution as dividends, after a sufficient amount had been reinvested as surplus earnings, to be approximately $14,000,000 per year,[23] the theoretical capitalization based upon the capitalized earnings distributed as dividends would then be approximately $175,000,000. And the actual value of assets should closely approximate this theoretical capitalization although it would not fall upon it, for differences in appraisal values involving reproduction versus original cost or replacement cost principles enter into every attempt at determining capitalization. It is quite possible, however, that a satisfactory capitalization value for the industry could be determined.

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[22] See basis of this estimation, Note 34, p. 19.

[23] This figure presumably has taken into consideration the present and possible future market conditions, normal growth, and all other factors to be considered.

The above computations reveal that under the assumed conditions the covercapitalization present in the aviation industry approximates $125,000,000. How much more or less than this amount the actual overcapitalization is cannot be definitely determined within the purpose of this inquiry. It is possible, however, to point out several important channels through which large capital funds have been dissipated. Considerable amounts were placed in the market for the purchase of aviation and other securities at greatly inflated prices. The sellers of the securities bought by the aviation companies are those who presumably have a considerable amount of this $125,000,000. In the case of North American Aviation Corporation alone, as of December 31, 1930 (as previously cited) there occurred a paper loss of over $11,000,000 in securities. While this loss has not yet been realized, there is no doubt but that in time it must be sustained, and the future indicates that it will be large.

A second channel into which these funds were dissipated, is to be found in the distribution of large amounts for the payments of patents and other intangibles that were over-valued because of the favorable future possibilities for substantial earnings offered at the time of valuation. Large amounts were paid out as organization and developmental expenses. Still other amounts were lost in the depreciation of physical properties bought or acquired at relatively high prices. Financing costs account for another part of the funds, while unusually heavy depreciation and obsolescence charges have accounted for other parts of this large sum. Finally, actual deficits from operations have accounted also for heavy amounts. Other smaller seepages should make up the total figure approximated above.

There are two methods by which this $125,000,000 (more or less) might be withdrawn from investors, thus making it possible in the future for the industry to be placed upon an earning basis. One way would be for the industry to use some of its surplus working capital funds to buy up in the market at greatly lowered prices enough of its stock to absorb the surplus amount.[24] Such

[24] Close examination of the balance sheets for all companies included in the study reveals the fact that in no case has there occurred an indication that such a procedure has so far been inaugurated.

action, however, if carried on extensively would probably meet with public disapproval, and therefore might prove to be even more damaging to the industry's credit standing than the present condition.

A second and more advisable way to absorb the present outstanding surplus stock would be to have the individual companies secure the confidence of stockholders in order to exchange outright, let us say, ten of the present shares for six of the new certificates. While it is true the present stockholders would be no better off so far as total earnings are concerned, still *they would likewise be no worse off*, and the financial structure of the industry would be greatly improved. This ten to six ratio, as well as the general plan here suggested, is offered only as a more general solution for the industry as a whole, and must not be taken to apply rigidly to individual companies. Each enterprise within the industry must work out its own individual exchange ratio based upon the difference between its real capital assets and the amount of capital funds represented by the original sale of stock on the one hand, and its actual and potential earnings on the other.

The industry would then be placed definitely upon an earning power basis, and thus would be afforded the *possibility* of paying adequate returns upon newly revalued investments. What the stockholder would lose *has already been lost.* He therefore, has nothing more to lose in these exchange and reorganization transactions. It would be definitely to his advantage to grant approval to such reorganization, for the present overcapitalization condition of the industry is damaging in its prohibition of adequate returns so essential for the assurance of capital funds necessary for future developments. The future value of the present stockholder's investment is at stake and must be largely determined by the degree to which this problem is to be met.

There is yet one more consideration to be made. The above proposal would place the industry in a normal earning power position, but would not *guarantee* such earnings. What then is to be done to aid the industry in taking advantage of its new financial position by consistently procuring adequate earnings?

To this question no definite formula can be applied. In the

final analysis, once an enterprise is founded upon a sound financial structure, the degree to which it fulfills its obligation to its owners in returning adequate earnings depends largely upon the wisdom with which sound financial policies are followed, and upon the shrewdness of entrepreneurial ability which the enterprise possesses. Earnings may be steadied by a scientific study of market conditions before producing or expanding. Sales may be made bona fide by a requirement of substantial deposits on purchase contracts. Lower production and operation costs may be accomplished by consolidation, elimination of the small unit producer, and by the inauguration of internal economics. In following these and other sound financial policies the industry should soon be able to build up a surplus sufficient to carry it through such periods of depression as it is now experiencing. Finally, once placed in the position where it is possible to earn, it should at all times strive to maintain a stringent dividend policy, for upon this policy must depend the future supply of capital funds without which future development cannot take place.

APPENDIX A

Organization List of Companies Included in the Study

Note: This list is the most recent (up to Nov. 15, 1931) that it has been possible to compile. Since many mergers have been made during the year 1931 and are constantly being made in organization simplification, the number of subsidiary companies shown here is considerably less than the number at the end of 1930 stated in the introductory chapter.

I. Manufacturing Group:
- 1. Bellanca Aircraft Corporation
  - a. Bellanca Aircraft Corporation of America
  - b. Blue Star Air Lines, Inc.
- 2. Consolidated Aircraft Corporation.
  - a. Frontier Enterprises, Inc.
    - (1) Tonawanda Products Corporation
    - (2) Niagara From the Air, Inc.
  - b. National Flying Schools, Inc.
  - c. Thomas-Morse Aircraft Corporation
  - d. Fleet Aircraft, Inc.
- *3. Curtiss Aeroplane and Motor Co., Inc.
  - a. Curtiss Engineering Corporation
  - b. Albert Reid Propeller Co.
  - c. Curtiss Assets Corporation
- *4. Curtiss-Reid Aircraft Co., Ltd.
  - a. Curtiss-Reid Flying Service, Ltd.
  - b. Curtiss-Reid Airways, Ltd.
  - c. Curtiss-Reid Flying Schools, Ltd.
- 5. Douglas Aircraft Co., Inc.
- 6. General Aviation Corporation
  - a. Fokker Aircraft Corporation of America
  - b. Atlantic Aircraft Corporation
  - c. Dayton-Wright Co.
- 7. Great Lakes Aircraft Corporation
- *8. Keystone Aircraft Corporation
  - a. Loening Aeronautics Engineering Corporation
- 9. Kinner Airplane and Motor Corporation, Ltd.
- 10. Stinson Aircraft Corporation
  (Controlled by Cord Corporation)
- 11. Waco Aircraft Co.
- 12. Warner Aircraft Corporation

*13. Wright Aeronautical Corporation
    a. Wright Flying Co.

II. Operating Group
    1. National Air Transport, Inc.
    2. Pan-American Airways Corporation
        a. New York, Rio and Buenos Aires Line, Inc.
        b. Pan-American-Grace Airways, Inc.
            (1) Peruvian Airways, Inc.
            (2) Chilean Airways, Inc.
        c. South American Air Lines, Inc.
        d. West Indian Aerial Express C. por A.
        e. Compania Mexicana de Aviacion S. A.
        f. Pan-American Airways of Texas, Inc.
    3. Transcontinental Air Transport Inc.
        a. Maddux Air Lines Co.
            (1) Maddux, Inc.
            (2) Maddux Air Lines, Inc.
            (3) Maddux International Airways, Inc.
            (4) Beacon Airways, Inc.
        b. Affiliates
            (1) Northwest Airways, Inc.
            (2) Transcontinental and Western Air, Inc.
    4. Western Air Express Corporation
        a. Aero Corporation of California
            (1) Standard Air Lines
        b. Midcontinent Air Express
        c. Pacific Marine Airways
        d. Affiliates
            (1) Transcontinental and Western Air, Inc.

III Auxiliary Group
    1. Aero Supply Manufacturing Co., Inc.
        a. National Steel Products Co.
        b. Standard Automatic Products Co.
    2. Bendix Aviation Corporation
        a. Bendix Brake Co.
        b. Bendix-Cowdrey Brake Tester, Inc.
        c. Bendix-Westinghouse Automotive Air Brake Co.
        d. Bragg-Kliesbrath Corporation
        e. American Propeller Co.
        f. Charles Cory Corporation

g. Aircraft Control Corporation
h. Bendix Research Corporation
i. Bendix-Stromberg Carburetor Co.
j. Delco Aviation Corp.
k. Eclipse Aviation Corporation
l. Eclipse Textile Devices
m. Hydraulic Brake Co.
n. International Gernandt Motors, Ltd.
o. Julian P. Friez and Sons, Inc.
p. Pioneer Instrument Co., Inc.
q. Scintilla Magneto Co., Inc.
Foreign Subsidiaries:
r. Bendix Perrot Brakes, Ltd.
s. Eclipse Machine Co., Ltd.
t. Stromberg Motor Devices, Ltd.

3. Central Airport, Inc.
4. Irving Air Chute Co. (Buffalo, N. Y.)
   a. Irving Air Chute Co. of Great Britain, Ltd.
5. Roosevelt Field, Inc.
*6. Curtiss-Wright Export Corporation
*7. Curtiss-Wright Airports Corporation
8. Curtiss-Wright Flying Service, Inc.
   a. Curtiss Flying Service, Inc. of New York
   b. Curtiss Flying Service, Inc. of Pennsylvania
   c. Curtiss Flying Service, Inc. of Maine

IV. Holding Company Group
1. Alexander Industries, Inc.
   a. Alexander Aircraft Co.
   b. Alexander Film Co.
2. The Aviation Corporation
   a. American Airplane and Engine Corporation
   b. Aviation Shares Corporation
   c. Embry Riddle Aviation Corporation
      (1) Embry Riddle Company
   d. American Airways, Inc.
      (1) Colonial Air Transport, Inc.
      (2) Colonial Western Airways, Inc.
      (3) Canadian Colonial Airways, Inc.
      (4) Texas Air Transport, Inc.
      (5) Gulf Air Lines, Inc.
      (6) Interstate Airlines, Inc.

(7) Alaskan Airways, Inc.
(8) Continental Air Lines, Inc.
(9) Robertson Aircraft Corporation
(10) Southern Transcontinental Airways, Inc.

3. Curtiss-Wright Corporation
   a. Wright Aeronautical Corporation
      (1) Wright Flying Co.
   b. Curtiss Caproni Corporation
   c. Curtiss-Wright Flying Service, Inc. (Formerly Curtiss Exhib. Co.)
      (1) Curtiss Flying Service, Inc. of New York
      (2) Curtiss Flying Service, Inc. of Pennsylvania
      (3) Curtiss Flying Service, Inc. of Maine
   d. Curtiss-Wright Export Corporation
   e. Curtiss-Wright Airports Corporation
      (1) New York Terminals, Inc.
   f. Curtiss-Reid Aircraft Co., Ltd.
      (1) Curtiss-Reid Flying Service, Ltd.
      (2) Curtiss-Reid Airways, Ltd.
      (3) Curtiss-Reid Flying Schools, Ltd.
   g. Curtiss Aeroplane and Motor Co., Inc.
      (1) Curtiss Engineering Corporation
      (2) Albert Reid Propeller Co.
      (3) Curtiss Assets Corporation
   h. Keystone Aircraft Corporation
      (1) Loening Aeronautics Engineering Corporation
   i. Curtiss-Wright Airplane Co. of Kansas
   j. Curtiss Wright Airplane Co. of Missouri
   k. Moth Aircraft Corporation
4. Fairchild Aviation Corporation
   a. Fairchild Aerial Surveys, Inc.
      (1) Fairchild Aerial Surveys de Mexico, S. A. (50%)
   b. Aerotopograph Corporation of America
   c. Fairchild Aircraft, Ltd. (60%)
   d. Fairchild Aerial Camera Corporation
   e. Kreider-Reisner Aircraft Co., Inc.
5. Detroit Aircraft Corporation
   a. Ryan Aircraft Corporation
   b. Lockheed Aircraft Co.
   c. Parks Air College, Inc.
   d. Aircraft Development Corporation
   e. Eastman Aircraft Corporation

f. Grosse Ile Aircraft, Inc.
g. Blackburn Aircraft Corporation
h. Gliders, Inc.
i. Aviation Parts Co.
j. Marine Aircraft Corporation
k. Winton Aviation Engine Co.
l. Aviation Tool Co.
m. Mahoney-Ryan Aircraft Corporation
n. Detroit Aircraft Export Corporation.

6. North American Aviation, Inc.
   a. New York and Atlantic Seaboard Air Express, Inc.
      (1) Eastern Air Transport, Inc.
   b. Sperry Gyroscope Co., Inc.
   c. Ford Instrument Co., Inc.
   d. B/J Aircraft Corporation
   e. Condor Corporation
   f. Intercontinent Aviation, Inc. (55.9%)

7. United Aircraft and Transport Corporation
   a. Boeing Airplane Co.
      (1) Boeing Aircraft of Canada, Ltd.
   b. The Hamilton Standard Propeller Corporation
   c. The Northrop Aircraft Corporation, Ltd.
   d. The Pratt and Whitney Aircraft Co., Ltd.
      (1) Canadian Pratt and Whitney Aircraft Co., Ltd.
   e. Sikorski Aviation Corporation
   f. The Stearman Aircraft Co.
   g. Chance Vought Corporation
   h. Boeing Air Transport, Inc.
   i. National Air Transport, Inc.
   j. Pacific Air Transport
   k. Varney Air Lines, Inc.
   l. The United Aircraft and Transport Corporation (Conn.)
   m. Boeing School of Aeronautics
   n. United Aircraft Exports, Inc.
   o. United Airports Co. of California, Ltd.
   p. The United Airports of Connecticut, Inc.
   q. United Airports, Inc.
   r. Stout Air Services, Inc.
   s. Air Industries Foundry

* All included as Curtiss-Wright Corporation.

APPENDIX B

New Corporate Security Issues

Stocks—Unit $1,000,000

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
January	65.3	32.3	134.5	65.9	70.4	171.7	108.5	141.0	633.3	126.8	580.7
February	17.7	33.4	78.7	58.9	102.7	126.2	278.0	135.0	673.0	156.1	88.2
March	16.9	79.7	64.5	57.0	80.3	181.3	114.5	256.5	559.1	123.4	....
April	32.5	27.8	113.6	52.7	141.5	31.7	100.1	315.5	438.3	261.4	....
May	4.1	103.5	30.6	248.6	77.5	196.4	127.5	321.3	869.3	433.6	....
June	0.8	62.9	25.4	30.9	106.2	57.2	155.9	409.6	358.0	155.0	....
July	94.8	17.4	21.7	39.9	160.6	101.0	79.1	208.2	648.5	70.4	....
August	6.1	41.7	14.6	38.3	64.4	46.5	153.9	73.9	658.1	57.7	....
September	2.5	154.7	29.9	50.2	74.6	48.3	109.6	172.0	1265.0	61.8	....
October	3.4	19.8	33.1	78.3	120.9	58.5	134.6	390.6	471.2	30.1	....
November	18.0	19.5	95.4	56.5	149.9	203.9	121.2	447.1	126.7	18.4	....
December	27.9	80.7	93.9	89.2	161.9	95.0	273.6	694.1	203.6	73.5	....
Average	23.3	52.0	61.4	72.2	109.2	109.8	146.4	297.1	575.3	130.7	....

Source: Standard Statistics, *General Section, Base Book Issue*, March, 1931.

APPENDIX C

Appropriations

Domestic Air Mail Service

1918	$100,000
1919	100,000
1920	850,000
1921	1,375,000
1922	1,425,000
1923	1,900,000
1924	1,500,000
1925	2,750,000
1926	3,385,000
1927	4,650,000
1928	6,650,000
1929	12,430,000
1930	15,000,000
1931	18,000,000
1932	20,000,000

Source: United States Post Office Department.

APPENDIX D

Aircraft and Parts—Summary for United States

CENSUS YEAR	NO. OF ESTABLISHMENTS	WAGE EARNERS AV. FOR YEAR	VALUE OF PRODUCTS
1930	...	.....	.....
1929	117	9,856	$61,973,079
1927	70	4,422	21,161,853
1925	44	2,701	12,524,719
1923	33	2,901	12,945,263
1921	21	1,395	6,641,988
1919	31	3,543	14,372,643
1914	16	168	789,872

Source: U. S. Dept. of Commerce, Bureau of the Census, *Biennial Census of Manufacturers*, 1927, pp. 1122–1123; 1921, p. 1080.

APPENDIX E

Consumption of Airplanes by Army and Navy

	ARMY	NAVY
1909	1	0
1910	0	0
1911	7	4
1912	12	4
1913	8	6
1914	11	4
1915	20	6
1916	83	59
1917	1,807	206
1918	11,916	2,075
1919	409	273
1920	214	42
1921	336	53
1922	187	39
1923	512	175
1924	241	76
1925	232	213
1926	315	163
1927	241	368
1928	415	432
1929	324*	423* (both 677)**
1930	360*	287* (both 836)**

* These are numbers of planes delivered. Source: *Aircraft Year Book.*

** Figures taken from *Air Commerce Bulletin.* Discrepancy probably due to difference between consumption and delivery figures.

Source of all figures except 1929 and 1930: *Air Commerce Bulletin:* Vol. I, No. 5, Sept. 2, 1929, p. 6; Vol. II, No. 17, Mar. 2, 1931, p. 443.

APPENDIX F

Airplanes Delivered to United States Army

	1930	1929	1928
Curtiss Aeroplane and Motor Co., Inc.	119	34	67
Boeing Airplane Co.	89	10	11
Keystone Aircraft Corp., Inc.	17	8	35
Thomas Morse Aircraft Co.	35	2	7
The Douglas Co.	49	75	112
Consolidated Aircraft Corp.	26	90	148
Fleet Aircraft Inc.	10	0	0
Ford Motor Co.	3	0	0
Sikorsky Aviation Corp.	1	0	0
Fokker Aircraft Corp.	3	1	0
Fairchild Airplane Mfg. Co.	8	1	0
Stout Metal Airplane Co.	0	2	8
Chance Vought Corp.	0	1	0
Loening Aeronautical Engineering Corp.	0	0	8
Total	360	324	396

Source: *Aircraft Year Book*, 1931, 1930, 1929.

APPENDIX G

Airplanes Delivered to United States Navy

	1930	1929	1928
American Motorless Aviation Corp.	1	0	0
Atlantic Aircraft Corp.	1	1	3
Boeing Aircraft Co.	47	29	104
Bristol Aeroplane Co.	1	1	0
Chance Vought Corp.	37	159	151
Consolidated Aircraft Corp.	26	87	10
Curtiss Aeroplane and Motor Corp.	53	37	28
Douglas Aircraft Co.	19	0	1
Fairchild Aviation Corp.	1	0	1
Ford Motor Co.	2	3	0
Hall Aluminum Aircraft Corp.	10	0	0
Keystone Aircraft Corp.	18	17	2
Loening Aeronautical Engineering Corp.	18	22	20
Navy Department	1	0	2
New Standard Aircraft Corp.	6	0	0
Glenn L. Martin Co.	25	41	102
Sikorsky Aviation Corp.	1	6	1
Great Lakes Aircraft Corp.	0	18	0
Berliner-Joyce Aircraft Co.	0	2	0
Total	287	423	432

Source: *Aircraft Year Book*, 1931, 1930, 1929.

APPENDIX H

Engines Delivered to United States Army

COMPANY	UNITS	1930 COST IN DOLLARS
Curtiss	363	$2,858,908.18
Kinner	30	.....
Liberty	150	675,594.00
Pratt and Whitney	666	3,902,123.92
Packard	2	6,137.50

Source: *Aircraft Year Book*, 1931.

APPENDIX I

Production by Years

	UNITS OF AIRCRAFT
1919	662
1921	302
1923	587
1925	789
1926	1,186
1927	1,995
1928	4,346
1929	5,306
1930	3,357

Source: *Air Commerce Bulletin*, Sept. 2, 1929, Vol. I, No. 5, p. 6; Mar. 2, 1931, Vol. II, No. 17, p. 443.

APPENDIX J

Aircraft Production by Months—1930

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
Civil or Commercial....	158	182	265	292	330	302	250	282	155	131	87	87	2,521
Military Deliveries.....	43	74	75	21	66	80	78	48	71	82	72	126	836
Total.....	201	256	340	313	396	382	328	330	226	213	159	213	3,357
Cumulative TOTAL....	201	457	797	1,110	1,506	1,888	2,216	2,546	2,772	2,985	3,144	3,357	.....

Source: *Air Commerce Bulletin*, Mar. 2, 1931, p. 443.

APPENDIX K

MONTHLY AVERAGE STOCK PRICES OF 337 INDUSTRIALS
1926–1931

	1926	1927	1928	1929	1930*	1931*
January	102.2	105.6	137.4	192.5	148.8	103.4
February	102.4	107.5	134.8	192.3	155.9	110.3
March	96.3	108.6	141.1	196.0	163.0	111.8
April	92.6	110.0	149.5	193.4	170.8	100.3
May	92.6	113.1	154.9	192.6	160.1	89.4
June	96.6	114.4	148.2	191.0	143.1	86.5
July	99.9	116.7	147.8	202.7	139.8	89.8
A gust	103.1	122.3	152.6	210.3	138.7	88.5
September	104.2	128.9	162.2	216.1	139.3	75.8
October	101.5	127.5	166.2	194.4	117.8	
November	102.9	131.3	178.9	144.8	108.5	.....
December	105.4	135.5	178.4	146.9	101.9	.....

* Standard Statistical Bulletin, Oct., 1931.
Source: Standard Statistical Bulletin, *Base Book Issue*, 1930–1931.

APPENDIX L

MONTHLY AVERAGE PRICES OF 10 AIRPLANE STOCKS*

	1926	1927	1928	1929	1930	1931
January	98.1	106.8	289.1	903.0	363.3	202.5
February	103.6	105.4	278.6	913.6	413.8	237.3
March	97.3	110.8	291.7	905.1	536.8	268.2
April	92.0	104.9	445.5	922.6	647.1	227.6
May	92.0	103.6	672.0	1147.	530.3	202.3
June	106.0	125.0	576.6	1069.	418.1	189.7
July	111.7	134.7	565.2	1131.	405.7	196.3
August	107.1	144.7	591.5	1130.	400.9	194.1
September	100.5	200.0	693.7	994.4	391.1	158.1
October	93.6	202.8	667.4	693.9	269.6	....
November	97.9	202.2	752.9	382.2	214.9	.....
December	101.2	269.0	817.0	360.2	177.0	.....

* In relatives, 1926 equals 100. Weighted by the number of shares of each stock outstanding. Corrected for the value of rights, stock dividends, changes in par value and consolidations. Based on closing prices for dates listed at end of this record.

Explanation of Stock Indexes: The stocks used in the preparation of this series of stock price indexes are tabulated below. Stocks, other than common stock, are so indicated. The present name of the corporation is given, and stocks that have been absorbed by consolidation are shown indented. The date on which the stock was included, or excluded, is shown in parentheses. Stocks in the index at the present time are preceded by a star.

* Aero Supply C1, 'B' (8-8-29).

* Aviation Corp. of the Americas (8-8-29).
* Consolidated Instrument (8-8-29).
* Curtiss-Wright (9–12–29)
  Curtiss Aeroplane and Motor (12–31–25)
  Wright Aeronautical (12–31–25)
  Keystone Aircraft (9–14–28)
* Fokker Aircraft (10–11–28)
* Great Lakes Aircraft (11–2–28).
* Irving Air Chute (8–8–29)
* Transcontinental Air Transport (5–18–28)
*United Aircraft and Transport (11–2–28)
  (Formerly Boeing Aircraft and Transport)
* Warner Aircraft (8–8–29)
Fairchild Aviation (10–11–28 to 8–1–29)
Lockheed Aircraft (10–11–28 to 8–1–29)

Source: Standard Statistical Bulletin, General Section, *Base Book Issue*, March, 1930, p. 95.

APPENDIX M

Capital Flotations of Aviation Companies

(Omitting stock-offer duplications)

YEAR	MONTH	COMPANIES OFFERING	OFFERING	CUMULATIVE TOTAL (000) OMITTED)
1928.....	January	0	$0,000,000	$000,000
	February	0	0,000,000	000,000
	March	1	500,000	500
	April	2	4,079,672	4,579.7
	May	0	000,000	4,579.7
	June	2	6,000,000	10,579.7
	July	0	000,000	10,579.7
	August	2	905,000	11,484.7
	September	2	15,264,933	26,749.6
	October	7	6,850,480	33,600.1
	November	5	13,674,000	47,274.1
	December	10	41,089,500	88,363.6
1929.....	January	4	22,292,500	110,656.1
	February	5	5,480,000	116,136.1
	March	9	58,465,625	174,601.7
	April	6	10,345,000	184,955.7
	May	6	33,334,200	218,289 9
	June	10	15,422,000	233,711.9
	July	6	5,394,049	239,106.0
	August	6	5,497,500	244,603.5
	September	4	1,462,500	246,066.0
	October	2	4,250,000	250,316.0
	November	1	3,000,000	253,316.0
	December	0	0,000,000	253,316.0
1930.....	January	0	0,000,000	253,316.0
	February	1	312,500	253,628.5
	March	1	370,000	253,998.5
	April	0	000,000	253,998.5
	May	0	000,000	253,998.5
	June	1	1,172,684	255,171.1
	July	0	000,000	255,171.1
	August	0	000,000	255,171.1
	September	0	000,000	255,171.1
	October	0	000,000	255,171.1
	November	0	000,000	255,171.1
	December	0	000,000	255,171.1

Note: Capital flotations of Aviation Investment Trusts (not included in the above) amounted to $19,534,995 (6 companies) in 1928; $5,830,000 (3 companies) in 1929; and none in 1930, making a total flotation of $25,364,995 for Aviation investment trusts during this three-year period.

Source: Compiled from the *Financial and Commercial Chronicle.*

APPENDIX N

Progress of Civil Aeronautics in the United States

	1926	1927	1928	1929	1930
I. Scheduled Air trans. op.					
Airplanes:					
In Ser. and reserve	.....	128	325	525	600
Value of	.....	$1,838,462	$7,000,000	$12,000,000	$11,489,450
Airways (all)					
Services in operation	18	23	63	97	122
Express mileage	4,434	7,233	8,379	11,775	20,445
Mail mileage	8,039	8,223	14,561	26,597	41,501
Pass. mileage	3,715	7,557	11,455	19,730	36,136
Total mileage:					
Domestic	8,252	8,865	15,590	24,865	29,887
Foreign Extensions	152	257	1,077	11,456	19,662
Miles flown per fatality	.....	.....	889,454	1,027,562	4,105,023
Total personnel employed	.....	462	1,496	2,345	3,475
Express and Frt. lbs	1,733,090	2,263,580	1,848,156	1,866,879	2,869,255
Gas consumed—gal	863,617	1,174,098	2,134,690	6,285,374	14,549,477
Oil consumed—gal	43,181	58,705	106,735	314,268	452,952
Mail by contr.—lbs	377,206	1,270,299	4,063,173	7,772,014	8,513,675

	1926	1927	1928	1929	1930
Mail:					
Income to contr.	$765,549	$2,643,454	$7,432,721	$17,042,521	$20,015,969
Inc. ave. per sch. rd. trip	$295	$654	$994	$1,205	$974
Inc. per lb. contr mail	$2.03	$2.08	$2.03	$2.01	$1.60
Inc. av. per lb. flown	$0.39	$0.625	$0.94	$1.06	$0.70
Load per sch. round tr. lbs.	112	273	489	617	608
Miles of mail airways	8,039	8,023	14,561	26,597	41,501
Total Carried—lbs.	810,855	1,654,165	4,063,173	7,772,014	8,513,675
Miles flown—tot. oper.	4,318,087	5,870,480	10,673,450	25,141,499	36,945,203
Passengers carried	5,782	8,679	49,713	173,405	417,505
Passenger fare—ave. mi.	$0.12	$0.106	$0.11	$0.12	$0.083
Revenue to operator:					
Mail contractors	$765,549	$2,643,454	$7,432,721	$17,042,521	$20,015,969
Pass. and Express	.....	.....	$599,059	$3,701,465	$5,761,151
Tot. all operators	$765,549	$2,643,454	$8,031,780	$20,743,986	$25,777,120
II. Fed. airways system and aids to air nav.					
Radio commun. stations	17	19	29	34	45
Weather Bur. 1st order sta.	202	207	206	207	209
Airway Beacons	612	760	1,188	1,311	1,652
Interm. land. fields—D. of Com.	92	134	210	285	347
Miles under constr.—D. of Com.	1,108	1,277	2,314	1,352	3,221
Miles light. by D. of Com.	2,041	4,468	6,988	12,448	15,258
III. Airports and Interm. fields.					
Airports:					
Commerc. and private	.....	263	365	495	564
Municipal	.....	240	368	453	550
Interm. lighted—D. of Com	92	134	210	285	347
Total Airports in oper.	.....	1,036	1,364	1,550	1,782

Source: *Air Commerce Bulletin*, Vol. 2, No. 23, pp, 612–614.

APPENDIX O

TOTAL—ALL GROUPS—25 COMPANIES

No Duplications

ITEMS	1921 (3)	1922 (2)	1923 (3)	1924 (3)	1925 (4)	1926 (9)
Net Worth	$6,730,720	$8,759,481	$5,809,631	$6,122,630	$6,915,769	$11,588,622
Total Debt	3,303,964	5,664,561	2,077,371	1,016,893	1,244,249	1,413,607
Surplus [1]	853,392	.....	279,869 [2]	293,828 [2]	423,049 [2]	3,391,048 [3]
Current Debt	3,126,124	2,086,935	2,077,371	1,016,893	1,244,249	1,283,607
Current Assets	6,123,998	5,751,628	4,662,013	4,145,816	5,247,855	6,359,220
Net Worth—Total Debt	10,034,684	14,424,042	7,887,004	7,139,523	8,080,014	13,001,828
Property and Equipment	2,392,678	2,354,774	2,520,973	2,224,192	2,289,835	3,188,927
Security Investments	246,855	825,809	870,565	1,113,199	1,488,146	743,413
Other Fixed Investments	1,137,851	1,049,318	768	2,875	2,572	154,312
Fixed Investments	3,137,342	2,872,078	2,876,657	2,944,607	3,093,470	3,873,057
Current Liabilities	3,412,099	2,345,473	2,101,975	1,049,448	1,377,242	1,660,823
Working Capital	6,123,998	5,751,628	4,662,013	4,145,816	5,247,855	6,359,220
Net Working Capital	2,711,899	3,406,155	2,560,038	3,096,367	3,870,613	4,698,397
Fixed Assets	4,384,657	3,913,176	3,921,287	3,448,222	3,569,780	4,480,760
Net Sales	3,693,562 [4]	3,593,606	4,917,061	5,977,261	6,244,211	9,973,233 [3-5]
Receivables	637,304	755,735	743,225	714,888	1,479,987	2,049,594
Merchandise Inventory	3,472,921	3,663,699	1,919,821	1,554,250	1,561,101	2,207,993
Net Earnings	562,357 [4]	418,937	892,481	861,091	1,210,427	1,701,158 [3]
Capital Stock	8,379,268	8,049,768	5,724,586	5,724,536	5,948,777	7,488,360
Net Profits [18]	793,618 [4]	436,435	791,904	637,874	863,723	1,536,519 [3-5]
Total Capital	10,034,684	14,424,042	7,887,004	7,139,523	8,080,014	13,001,828
Net Income	384,153 [4]	539,601	642,485	588,913	961,455	1,373,094 [3]
Total Assets	15,984,440	14,983,312	12,723,276	11,784,655	13,257,398	15,183,824
Goodwill, Patents, etc.	1,991,979	1,558,402	1,400,312	1,224,030	1,248,118	1,253,480
Other Assets	5,475,786	5,318,508	4,139,977	4,190,617	4,439,758	4,343,844
Property, Equipment—Investment	5,530,020	5,226,852	5,397,630	5,168,799	5,383,304	7,061,984

TOTAL—ALL GROUPS—25 COMPANIES—(*Continued*)

No Duplications

ITEMS	1927 (13)	1928 (24)	J. 1929 (12)	1929 (25)	1930 (24)
Net Worth	$17,981,478	$114,844,818	$239,665,546	$252,238,192	$222,613,273
Total Debt	3,826,319	10,896,808	11,603,681	22,228,120	14,055,304
Surplus	7,780,862 [3]	13,003,263 [3]	24,417,042	17,869,939	−11,179,241
Current Debt	3,703,919	10,663,711	11,575,682	20,040,570	12,880,947
Current Assets	11,859,174	86,175,337	165,938,259	160,300,382	111,637,558
Net Worth—Total Debt	21,807,797	125,741,625	251,269,227	274,466,312	236,668,577
Property and Equipment	5,891,775	24,034,481	66,233,469	104,908,869	109,140,874
Security Investments	535,119	12,794,470	26,913,317	37,065,804	38,534,478
Other Fixed Investments	662,481	734,233	1,041,703	5,213,831	3,098,862
Fixed Investments	4,514,262	23,570,916	22,226,931	16,836,918	24,842,761
Current Liabilities	3,996,407	11,833,939	12,266,524	23,022,648	14,063,867
Working Capital	11,859,174	86,175,337	165,938,259	160,300,382	111,637,558
Net Working Capital	7,862,767	74,341,399	153,671,734	137,277,724	97,573,891
Fixed Assets	12,472,287	32,767,190	107,480,328	145,252,936	155,202,783
Net Sales	14,089,531 [6-3-7]	35,758,321 [9-10-8]	33,982,381 [7-11-12]	87,243,331 [13-10]	80,386,366 [13-10]
Receivables	3,188,930	9,504,180	10,484,595	15,320,052	13,943,676
Merchandise Inventory	5,471,405	13,845,278	24,334,572	37,988,627	31,133,020
Net Earnings	3,188,264 [13-14-3-7]	17,510,813 [9-3]	17,349,095 [11-12]	22,677,433 [12]	−4,831,600 [16-13-17]
Capital Stock	14,670,978	109,980,782	255,980,143	274,649,293	279,059,185
Net Profits[18]	3,766,906 [3-7-13]	17,517,397 [8-16]	14,640,609 [10-11-19]	17,501,493 [10]	−5,562,327 [13-17]
Total Capital	21,807,797	125,741,625	251,269,227	274,466,312	236,668,577
Net Income	3,006,171 [7-23-3]	15,257,389	13,995,695 [10-11-12]	14,798,839 [10-12]	−12,609,784 [16-13-20]
Total Assets	30,538,735	145,191,407	299,806,590	333,287,398	299,330,886
Goodwill, Patents, etc.	6,533,080	8,139,238	41,021,593	38,974,369	44,745,724
Other Assets	6,207,273	26,248,888	26,388,003	27,734,080	32,490,545
Property, Equipment—Investment	10,406,037	47,605,397	88,460,400	121,745,781	133,983,635

[1] Only surplus determined as earned.
[2] No figures for Wright Aeronautical Corporation obtainable.
[3] No figures for Keystone Aircraft Corp. obtainable.
[4] No Douglas figures obtainable.
[5] No Stinson figures obtainable.
[6] No net sales figures for 1927–1930 inclusive are included for auxiliary group.
[7] No Fokker figures obtainable.
[8] No Alexander Industries figures obtainable.
[9] No Great Lakes Aircraft figures obtainable.
[10] Fokker figures for one-half year only.
[11] No Detroit Aircraft figures obtainable.
[12] No Kinner figures obtainable.
[13] No Fairchild figures obtainable.
[14] No Western Air figures obtainable.
[15] No Bellanca figures obtainable.
[16] No Warner figures obtainable.
[17] No Pan-American figures obtainable.
[18] No profits obtainable for Alexander Industries for 1925 and 1926.
[19] No Aviation Corp. figures obtainable.
[20] No Waco figures obtainable.

APPENDIX P

TOTAL—ALL GROUPS—25 COMPANIES

No Duplications

RATIOS	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
Net Worth: Total Debt	204	154	279	603	557	815	468	933	2080	1130	1583
Surplus: Net Worth	12.6	.....	4.8	5	6.1	29	43	11.3	10.2	7.1	−5.3
Current Debt: Total Debt	94	37	100	100	100	90	97	98	100	90	92
Current Debt: Net Worth	46	24	36	16	17	11	20	9.3	4.7	7.9	5.8
Current As.: Net Worth.—T. Debt	61	40	59	58	64	48	54	69	66	58	47
Prop. and Equip.: Net Worth —T. D.	24	16	32	31	28	24	27	19	27	38	46
Security invest.: Net Worth —T. D.	2.4	5.7	11	16	18	5.7	2.4	20	11	14	16
Other fix. inv.: Net Worth— T. D.	11	7.2	0	0	.....	1.1	3.0	.6	.4	1.9	1.3
Net Worth: Fixed Invest.	215	305	201	207	223	297	396	487	1080	1490	900
Cur. Assets: Net Worth	91	66	80	68	75	55	65	75	69	64	50
Cur. Assets: Cur. Liabilities	179	245	222	395	382	382	295	730	1350	695	780
Net Wkg. Cap.: Fix. Assets	62	87	65	90	108	104	63	227	144	95	63
Net Wkg. Cap.: Sales	73	95	52	52	62	47	56	208	452	158	121
Net Wkg. Cap.: Receivables	425	451	344	433	263	229	247	781	1462	895	700
Net Wkg. Cap.: Merchandise	78	93	133	199	248	213	143	539	633	362	314
Net Earnings: Net Worth	8.3	4.7	15	14	17.5	15.7	17.7	15.2	7.2	9.0	−2.2
Net Income: Net Worth	5.7	6.2	11	9.6	13.9	11.9	16.7	13.3	5.8	5.8	−5.7
Net Worth: Capital Stock	80	108	101	107	116	153	122	104	94	92	80
Inventory: Fixed Assets	79	94	49	45	43	49	44	42	23	26	20
Net Sales: Current Assets	60	62	105	144	119	157	118	41	21	55	72
Net Profit: Total Assets	4.9	2.9	6.2	5.4	6.5	10.1	12.3	12.1	4.9	5.3	−1.9
Sales: Total Capital	37	25	62	84	77	77	64	28	14	32	34
Net Sales: Fixed Assets	84	92	125	173	175	222	112	109	32	60	52
Fixed Assets: T. Capital	44	27	50	48	44	34	57	26	43	53	65
Other Assets: T. Capital	55	37	53	59	56	33	29	21	11	10	14
Net Wth.: Prop. etc.—Inv.	122	166	108	118	129	165	175	241	271	206	166
Merchandise: Receivables	548	484	257	217	106	107	172	146	232	248	224
Patents, etc.: Fix. Assets	45	39	36	35	34	27	52	25	38	27	29

APPENDIX Q

TOTAL—ALL GROUPS—25 COMPANIES*

Combination Balance Sheets as of December 31, 1921–1930

(Individual Items Reduced to Percentages of Their Respective Total Assets and Liabilities)

ASSETS	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
CURRENT:											
Cash in bank and on hand	11.0	2.0	8.4	5.9	4.7	8.1	8.2	33.8	34.0	20.8	8.7
Accounts and notes rec	4.0	5.1	5.9	6.1	11.2	13.6	10.4	6.6	3.5	4.6	4.7
Marketable securities	1.6	5.5	6.9	9.4	11.3	4.9	1.8	8.8	9.0	11.1	12.9
Inventories and supplies	21.8	24.5	15.3	13.2	11.8	14.6	17.9	9.5	8.1	11.4	10.4
Other current assets	.1	.4	.4	.6	.7	.9	.6	.5	.6	.1	.7
Deposits	.....	.....	.....	.....	.....	.....	.....	.....	.2	.1	.0
Total Current Assets	38.4	38.5	36.6	35.2	39.6	42.0	39.0	59.5	55.4	48.0	37.5
FIXED:											
Bldgs., Airports, Impr., etc	15	15.7	19.8	18.9	17.3	21.0	19.3	16.5	22.1	31.5	36.5
Goodwill, patents, devt., etc	12.5	10.4	11.0	10.4	9.5	8.3	21.4	5.6	13.7	11.7	18.4
Other fixed assets	.....	.....	.....	.....	.2	.3	.2	.4	.1	.4	.4
Total Fixed Assets	27.5	26.2	30.8	29.3	27.0	29.6	41.0	22.6	35.8	43.5	51.8
OTHER ASSETS:											
Deferred Charges	7.5	9.4	9.9	10.5	10.1	1.2	2.1	.9	.3	.7	.7
Investments	19.7	19.2	22.7	25.0	23.3	25.6	14.7	16.2	7.4	5.0	8.3
Other	7.1	7.0	.0	.0	.0	1.9	3.4	.9	1.1	2.6	1.9
Total Assets	100	100	100	100	100	100	100	100	100	100	100

APPENDIX Q—(*Continued*)

LIABILITIES	1921	1922	1923	1924	1925	1926	1927	1928	J. 29	1929	1930
CURRENT:											
Notes and Accts. payable	18.7	13.7	16.1	8.5	8.5	6.1	8.4	4.4	2.4	4.5	3.2
Accruals	.8	.2	.1	.1	.6	.6	1.5	2.2	.8	.8	.6
Reserves for taxes	1.6	1.6	.2	.3	.8	1.1	1.0	.8	.2	.8	.4
Deposits on contracts	.....	.....	.....	.1	.2	1.4	1.9	.4	.6	.6	.3
Other current liabilities	.2	.1	.0	.....	.3	1.8	.4	.2	.0	.2	.2
Total Current Liabilities	21.4	15.7	16.5	8.9	10.4	11.0	13.0	8.2	4.1	6.9	4.7
CAPITAL AND SURPLUS:											
Capital Stock and Capital Surplus	52.5	53.7	45.0	48.5	45.0	49.5	48.0	76.0	85.0	82.3	93.3
Earned surplus	8.9	7.7	11.7	13.8	16.8	35.3	22.2	9.0	8.2	5.4	−3.7
Total Cap. and Surplus	61.2	61.4	57	62.5	61.5	84.5	80.2	85	93.3	88	90
Reserves for contingenices	17.4	.2	26.8	28.8	25.5	.8	1.2	1.6	.8	1.0	3.7
Other Liabilities	.....	23.	.....	.....	2.7	3.7	5.5	5.6	1.6	4.4	2.1
Total Liabilities	100	100	100	100	100	100	100	100	100	100	100

No Duplications*

APPENDIX R

TOTAL—ALL GROUPS—25 COMPANIES

Combination Balance Sheets as of December 31, 1921–1930

ASSETS	1921 (3)	1922 (2)	1923 (3)	1924 (3)	1925 (4)	1926 (9)
CURRENT:						
Cash in bank and on hand	$1,752,832	$ 451,312	$1,075,442	$ 694,835	$ 625,979	$1,225,036
Accounts and notes receivable	637,304	755,736	743,225	714,888	1,479,987	2,049,594
Marketable securities	246,855	825,809	870,565	1,113,199	1,488,146	743,413
Inventories and supplies	3,472,921	3,663,699	1,919,822	1,554,250	1,561,101	2,207,993
Other current assets	14,086	55,073	52,959	68,644	92,642	133,684
Deposits	.....	.....	.....	.....	.....	.....
Total Current Assets	6,123,998	5,751,628	4,662,013	4,145,815	5,247,855	6,359,220
FIXED:						
Buildings, Airports, Imp., etc	2,392,678	2,354,774	2,520,974	2,224,192	2,289,835	3,188,927
Goodwill, patents, contracts	1,991,979	1,558,401	1,400,313	1,224,030	1,248,118	1,253,480
Other fixed assets	.....	.....	.....	.....	32,827	38,353
Total Fixed Assets	4,384,657	3,913,176	3,921,287	3,448,222	3,569,780	4,480,760
OTHER ASSETS:						
Deferred charges	1,200,593	1,397,112	1,262,552	1,243,135	1,343,717	177,868
Investments	3,137,342	2,872,078	2,876,657	2,944,607	3,093,469	3,873,057
Other	1,137,851	1,049,318	768	2,875	2,572	292,919
TOTAL ASSETS	15,984,440	14,983,312	12,723,276	11,784,655	13,257,398	15,183,824
LIABILITIES						
CURRENT:						
Notes and Accounts payable	$2,988,314	$2,054,711	$2,051,798	$ 997,933	$ 1,120,523	$ 920,827
Accruals	125,972	32,224	15,578	9,053	77,849	91,188
Reserves for taxes, etc	261,984	236,969	30,884	34,362	112,782	168,241
Deposits on contracts	.....	.....	.....	8,100	26,755	211,263
Other current	35,829	21,569	3,715	.....	39,333	269,305
Total Current Liabilities	3,412,098	2,345,473	2,101,975	1,049,447	1,377,242	1,660,823
CAPITAL AND SURPLUS:						
Capital Stock and Capital Surplus	8,379,268	8,049,768	5,724,586	5,724,536	5,948,777	7,488,360
Earned Surplus	1,409,419	1,152,432	1,485,358	1,622,126	2,215,106	5,353,742
Total Capital and Surplus	9,788,687	9,202,200	7,209,944	7,346,661	8,163,883	12,842,102
Reserves for contingencies	2,783,655	35,853	3,411,357	3,388,546	3,366,056	125,804
Other Liabilities	.....	3,399,786	.....	.....	350,217	555,095
TOTAL LIABILITIES	$15,984,440	$14,983,312	$12,723,276	$11,784,655	$13,257,398	$15,183,824

APPENDIX R (*Continued*)

TOTAL—ALL GROUPS—25 COMPANIES

Combination Balance Sheets as of December 31, 1921–1920

ASSETS	1927 (13)	1928 (24)	J. 1929* (12)	1929 (25)	1930 (24)
CURRENT:					
Cash in bank and on hand	$2,485,564	$49,255,405	$101,656,753	$69,382,982	$25,974,405
Accounts and notes receivable	3,188,930	9,504,180	10,484,595	15,320,052	13,943,676
Marketable securities	535,119	12,794,470	26,913,317	37,065,804	38,534,478
Inventories and supplies	5,471,405	13,845,278	24,334,572	37,988,627	31,133,020
Other current assets	178,156	776,005	1,827,544	169,749	1,993,437
Deposits	.....	.....	721,477	382,159	58,538
Total Current Assets	11,859,174	86,175,337	165,938,259	160,300,382	111,637,558
FIXED:					
Buildings, Airports, Imp., etc	5,891,775	24,034,481	66,233,469	104,908,869	109,140,874
Goodwill, patents, contracts	6,533,080	8,139,238	41,021,593	38,974,369	44,745,724
Other fixed assets	47,432	593,472	225,266	1,369,697	1,316,185
Total Fixed Assets	12,472,287	32,767,190	107,480,328	145,252,936	155,202,783
OTHER ASSETS:					
Deferred charges	649,262	1,347,558	763,756	2,311,756	1,936,381
Investments	4,514,262	23,570,916	22,226,931	16,836,918	24,842,761
Other	1,043,749	1,330,414	3,397,316	8,585,406	5,711,403
TOTAL ASSETS	30,538,735	145,191,407	299,806,590	333,287,398	299,330,886
LIABILITIES					
CURRENT:					
Notes and Accounts payable	$2,545,015	$6,414,754	$7,185,105	$15,111,089	$9,614,533
Accruals	460,771	3,242,582	2,478,554	2,753,698	1,860,433
Reserves for taxes, etc	304,147	1,182,432	730,260	2,759,029	1,145,877
Deposits on contracts	578,767	635,668	1,862,647	1,847,118	905,361
Other current	107,707	358,494	9,958	551,714	537,663
Total Current Liabilities	3,996,407	11,833,939	12,266,524	23,022,648	14,063,867
CAPITAL AND SURPLUS:					
Capital Stock and Capital Surplus	14,670,978	109,980,782	255,980,143	274,649,293	279,059,185
Earned Surplus	9,843,580	13,003,263	24,417,042	17,869,939	—11,179,241
Total Capital and Surplus	24,514,558	122,984,046	280,397,185	292,519,232	267,879,945
Reserves for contingencies	361,180	2,347,543	2,320,344	3,237,370	11,071,677
Other Liabilities	1,666,590	8,025,879	4,822,537	14,508,046	6,315,397
TOTAL LIABILITIES	$30,538,735	$145,191,407	$299,806,590	$333,287,398	$299,330,886

* No operating companies included.

MANUFACTURING GROUP—9 COMPANIES

Duplications Dropped

NO. OF COMPANIES ITEMS:	1921 3	1922 2	1923 3	1924 3	1925 3	1926 5
Net Worth	$6,730,819.87	$8,759,480.58	$5,809,631.10	$6,122,630.45	$6,736,349.51	$9,994,063.99
Total Debt	3,303,964.15	5,664,561.30	2,077,371.20	1,016,892.45	1,147,626.92	1,261,699.54
Surplus*	853,392.00	.....	279,869.18[2]	293,827.75[2]	336,060.41[2]	3,191,232.27[3]
Current Debt	3,126,124.15	2,086,935.13	2,077,371.20	1,016,892.45	1,147,626.92	1,131,699.54
Current Assets	6,123,997.57	5,751,628.12	4,662,012.25	4,145,815.12	4,750,441.55	5,053,618.24
Net Wth.—T. Debt	10,034,684.02	14,424,041.88	7,887,004.30	7,139,522.90	7,803,976.43	11,255,763.53
Prop. and Eqpt	2,392,177.73	2,354,774.31	2,520,973.95	2,224,192.45	2,198,258.02	2,453,273.17
Security Inv	246,885.40	825,808.75	870,565.02	1,113,119.00	1,488,145.75	733,350.44
Other Fix. Inv	1,137,851.34	1,049,318.26	767.99	2,875.26	2,572.49	154,312.00
Fixed Inv	3,137,341.87	2,872,077.95	2,876,657.08	2,944,607.00	3,073,836.08	3,812,859.29
Current liab	3,412,098.15	2,345,472.70	2,101,974.64	1,049,447.45	1,266,419.06	1,489,029.09
Net Work. Cap	2,711,899.42	3,406,155.42	2,560,037.61	3,096,367.67	3,484,022.49	3,564,589.15
Fixed Assets	4,384,656.66	3,913,175.91	3,921,286.69	3,448,222.44	3,314,561.87	3,574,819.65
Net Sales	3,693,562.49[1]	3,593,606.19	4,917,061.55	5,977,260.38	5,597,102.39	8,503,699.18[3-4]
Receivables	637,303.63	755,735.43	745,227.91	714,887.67	1,039,914.81	1,509,093.20
Inventory	3,472,920.60	3,663,698.81	1,919,821.65	1,554,250.07	1,534,465.28	1,734,381.58
Net Earnings	562,356.83[1]	418,937.29	892,480.81	861,090.72	1,133,881.37	1,732,665.88[3]
Capital Stock	8,379,268.00	8,049,768.22	5,724,585.75	5,724,535.53	5,724,535.55	5,861,683.53
Net Profits	793,617.76[1]	436,434.97	791,904.08	637,873.68	863,723.36	1,556,594.62[3-4]
Total Capital	10,034,684.02	14,424,041.88	7,887,004.30	7,139,522.90	7,803,976.43	11,255,763.53
Net Income	384,152.83[1]	539,600.53	642,484.93	588,912.81	915,451.07	1,479,456.42[3]
Total Assets	15,984,440.16	14,983,312.43	12,723,275.95	11,784,654.73	12,485,128.74	12,770,704.56
Goodwill and Patents	1,992,478.93	1,558,401.62	1,400,312.74	1,224,029.99	1,116,303.85	1,121,546.48

* Only Surplus definitely known to be earned included.

[1] No Douglas figures obtainable.

[2] No Wright figures obtainable.

[3] No Keystone figures obtainable.

[4] No Stinson figures obtainable.

APPENDIX S (*Continued*)
Manufacturing Group

NO. OF COMPANIES ITEMS	1927 6	1928 11	J.29 4	1929 9	1930 9
Net Worth	$12,504,580.41	$41,407,442.80	$16,741,825.50	$24,853,336.19	$20,922,988.93
Total Debt	2,198,665.66	4,293,056.05	1,184,661.39	2,148,685.83	986,610.39
Surplus*	4,820,470.57[3]	6,313,248.68[3]	511,601.41	3,982,431.54	−1,494,918.27
Current Debt	2,076,265.66	4,203,056.05	1,184,661.39	2,148,684.83	986,610.39
Current Assets	6,551,049.49	28,396,753.92	14,776,453.15	19,027,170.40	15,588,313.91
Net Wth.—T. Debt	14,703,246.07	45,700,498.85	17,926,486.87	27,002,022.02	21,909,599.32
Prop. and Eqpt	3,333,852.84	15,202,255.57	2,883,841.64	6,125,346.56	6,183,305.36
Security Inv	512,718.55	3,524,149.65	97,487.50	2,615,470.34	3,258,717.73
Other Fix. Inv	537,328.00	66,741.07	157,195.85	789,268.80	172,859.83
Fixed Inv	4,158,679.10	1,586,966.12	25,873.90	24,248.87	263,418.42
Current liab	2,216,577.35	4,908,953.20	1,341,770.09	2,443,177.93	1,071,473.91
Net Work. Cap	4,334,472.14	23,487,836.72	13,434,683.06	16,583,992.47	14,517,040.00
Fixed Assets	4,988,539.49	17,435,246.47	4,518,236.60	8,710,842.42	9,710,436.43
Net Sales	10,366,727.05[3-5]	26,268,054.23[6-7]	1,304,085.29[7-10]	9,727,595.10[7-10]	13,345,597.53[7-10]
Receivables	1,091,503.42	3,032,773.35	885,316.28	1,577,085.22	1,543,585.86
Inventory	3,528,512.12	7,415,903.29	3,403,593.09	7,698,191.32	6,124,588.09
Net Earnings	2,419,653.84[3-5]	7,946,002.04[6-8]	975,702.50[10]	1,282,923.50[10]	−2,840,944.39[9-10]
Capital Stock	7,270,893.53	28,082,451.07	11,759,116.86	15,382,344.05	17,054,770.25
Net Profits	2,151,893.10[3-5]	7,502,036.73[9]	412,403.46[7]	725,217.26[7]	−937,558.67[10]
Total Capital	14,703,246.07	45,700,498.85	17,926,486.87	27,002,022.02	21,909,599.32
Net Income	2,106,555.08[3-5]	6,929,752.89	374,167.94[7-10]	812,064.27[10]	−2,878,291.99[9-10-11]
Total Assets	16,496,089.73	48,193,163.31	19,577,217.11	29,695,717.72	26,256,407.12
Goodwill and Patents	1,649,469.26	1,760,804.66	1,409,129.29	2,021,191.61	3,013,932.18

[5] No Fokker figures obtainable.
[6] Great Lakes figures lacking.
[7] Fokker figures for one-half year only.
[8] Bellanca income figures are ended September 30th.
[9] Warner figures missing.
[10] Kinner figures missing.
[11] Waco figures missing.

APPENDIX T

Manufacturing Group—9 Companies

Duplications Dropped

RATIOS	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
Net Wth.: Total Debt.	204	154	279	603	587	792	568	964	1413	1156	2120
Surplus: Net Worth...	12.6	.....	4.8	5	5	32	39	15	7.5	16	—7.1
Current Debt: T. Debt.	94	37	100	100	100	90	94	98	100	100	100
Current Debt: Net Wth.....	46	24	36	16	17	11	17	10	7	8.6	4.7
Current As.: Net Wth.—T.Dbt.....	61	40	59	58	61	45	45	62	82	70	71
Prop.: Net Wth.—T. Debt.....	24	16	32	31	28	22	23	33	16	22	28
Sec. Inv.: Net Wth.—T. Dbt.....	2.4	5.7	11	16	19	6.5	3.4	7.7	.5	9.6	14
Other Fix. Inv.: Net Wth.—T. D.....	.11	7.2	0	0	0	1.3	3.6	0	.8	2.9	.8
Net Wth.: Fix. Inv....	215	304	201	207	219	262	301	2610	64728	102479	7946
Cur. Assets: Net Wth..	91	66	80	68	71	51	52	69	88	76	74
Cur. Assets: Cur. Liab..	179	245	222	395	375	339	296	578	1101	778	1454
Net Wkg. Cap.: Fix. Assets.....	62	87	65	90	105	99.7	87	135	297	190	149

APPENDIX T—(*Continued*)

MANUFACTURING GROUP—9 COMPANIES DUPLCIATIONS DROPPED

	1921	1922	1923	1924	1925	1926	1927	1928	J. 29	1929	1930
Net Wkg. Cap.: Sales..	73	95	52	52	62	42	42	89	1029	170	108
Net Wkg. Cap.: Receivables	425	451	344	433	335	236	397	774	1517	1051	940
Net Wkg. Cap.: Merchandise.....	78	93	133	199	227	206	123	316	394	215	236
Net Earnings: Net Wth.....	8.3	4.7	15	14	17	17	19	19	5.8	5.1	−13
Net Income: Net Wth..	5.7	6.1	11	9.6	13.5	15	16.8	16.7	2.2	3.2	−13.7
Net Wth.: Cap. Stock..	80	108	101	107	118	171	172	147	142	161	122
Inventory: Fix. Assets.	79	94	49	45	46	49	71	43	75	88	63
Net Sales: Cur. Assets.	60	62	105	144	118	168	158	93	8.8	51	85
Net Profits: T. Assets..	4.9	2.9	6.2	5.4	6.9	12.1	13.0	15.5	2.1	2.4	−3.5
Sales: Total Capital...	37	25	62	84	72	76	71	57	7.2	36	60
Net Sales: Fix. Assets.	70	92	125	173	168	237	207	150	28	111	137
Other Assets: T. Capital	55	37	53	59	57	37	34	5.1	1.5	7.2	4.4
Net Wth.: Prop.—Inv..	122	166	108	118	128	160	168	247	576	403	324
Merchandise: Receivables.....	548	484	257	217	147	115	324	245	384	487	398
Patents: Fix. Assets...	45	39	36	35	34	31	33	10	31	26	49

APPENDIX U

MANUFACTURING GROUP—9 COMPANIES

Combination Balance Sheets as of December 31, 1921–1930

(Individual items reduced to percentages of their respective total assets and liabilities)

Duplications Dropped

ASSETS	1921	1922	1923	1924	1925	1926	1927	1928	J.29	1929	1930
CURRENT:											
Cash in bank and on hand	11	3.0	8.4	5.9	5.0	7.8	8.2	29.5	53	23.7	17.6
Accounts and notes receivable	4	5.1	5.9	6.1	8.3	11.8	6.6	6.3	4.6	5.3	5.9
Marketable securities	1.6	5.5	6.9	9.4	11.9	5.7	3.1	7.3	.5	8.8	12.4
Inventories and supplies	21.8	24.5	15.3	13.2	12.2	13.6	21.4	15.4	17.4	25.8	23.3
Other current assets	.1	.4	.4	.6	.5	.6	.4	.5	.0	.4	.2
Deposits	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Current Assets	38.4	38.5	36.6	35.2	38.0	39.5	39.8	59.0	76.0	64.0	59.4
FIXED:											
Bldgs., airports, impr. etc.	15.0	15.7	19.8	18.9	17.6	19.2	20.2	31.5	14.8	20.7	23.5
Goodwill, pat., devpt., etc.	12.5	10.4	11.0	10.4	9.0	8.8	10.0	3.7	7.2	6.8	11.5
Other fixed assets	.....	.....	.....	.....	.....	.....	.0	1.0	1.2	1.9	2.0
Total Fixed Assets	27.5	26.2	30.8	29.3	26.5	28.0	30.2	36.2	23.2	29.3	37.0
OTHER ASSETS:											
Deferred charges	7.5	9.4	9.9	10.5	10.7	1.3	1.3	1.4	.5	3.3	1.3
Investments	19.7	19.2	22.7	25.0	24.5	29.9	25.3	3.3	.1	.1	1.0
Other	7.1	7.0	.0	.0	.0	1.2	3.6	.2	.8	3.2	1.4
Total Assets	100	100	100	100	100	100	100	100	100	100	100

APPENDIX U—(*Continued*)

MANUFACTURING GROUP—9 COMPANIES

COMBINATION BALANCE SHEETS AS OF DEC. 31, 1921—1930,

LIABILITIES	1921	1922	1923	1924	1925	1926	1927	1928	J. 29	1929	1930
CURRENT:											
Notes and accts. pay	18.7	13.7	16.1	8.5	8.7	6.5	8.5	6.6	5.0	5.1	2.3
Accruals	.8	.2	.1	.1	.1	.3	.6	.9	.4	.6	.8
Reserves for taxes, etc	1.6	1.6	.2	.3	.8	1.2	1.0	1.5	1.0	1.4	.5
Deposits on contracts	.....	.....	.....	.1	.2	1.7	3.2	1.1	.5	1.2	.5
Other current liabilities	.2	.1	.0	.....	.3	2.1	.2	.2	.....	.....	.0
Total Current Liability	21.4	15.7	16.5	8.9	10.1	11.7	13.4	10.2	6.9	8.2	4.1
CAPITAL AND SURPLUS:											
Cap. stk. and cap. surplus	52.5	53.7	45.0	48.5	45.6	46.0	44.0	76.7	90.0	77.0	97.0
Earned surplus	8.9	7.7	11.7	13.8	17.0	41.2	41.6	13.2	2.6	13.0	−5.7
Total capital and Surplus	61.2	61.4	57.0	62.5	62.5	87.0	86.0	90.0	93.0	90.5	91.0
RESERVES FOR CONTINGENCIES	17.4	.2	26.8	28.8	27.0	.....	.....	.....	.4	1.2	3.8
OTHER LIABILITIES	.....	23.0	.....	.....	.....	1.3	.8	.2	.1	.1	1.0
TOTAL LIABILITIES	100	100	100	100	100	100	100	100	100	100	100

MANUFACTURING GROUP—9 COMPANIES

Combination Balance Sheets as at December 31
Duplications Dropped

ASSETS	1921 (3)	1922 (2)	1923 (3)	1924 (3)	1925 (3)	1926 (5)
CURRENT:						
Cash on hand and deposits	$1,752,832	$ 451,312	$1,075,442	$ 694,834	$ 621,680	$ 994,759
Notes and accounts receivable	637,304	755,735	743,225	714,888	1,039,915	1,509,093
Government and listed securities	246,855	825,809	870,565	1,113,199	1,488,146	733,350
Merchandise Inventory	3,472,921	3,663,699	1,919,822	1,554,250	1,534,465	1,734,382
Other Current Assets	14,086	55,073	52,959	68,644	66,235	82,034
Total Current Assets	6,123,998	5,751,628	4,662,012	4,145,815	4,750,442	5,053,618
FIXED ASSETS:						
Property and Equipment	2,392,178	2,354,774	2,520,974	2,224,192	2,198,258	2,453,273
Goodwill, patents, etc	1,992,479	1,558,402	1,400,313	1,224,030	1,116,304	1,121,546
Other fixed assets	.....	.....	.....	.....	.....	.....
Total Fixed Assets	4,384,657	3,913,176	3,921,287	3,448,222	3,314,562	3,574,820
OTHER ASSETS:						
Deferred charges	1,200,593	1,397,112	1,262,552	1,243,135	1,343,717	172,453
Investments	3,137,342	2,872,078	2,876,651	2,944,607	3,073,836	3,812,859
Other	1,137,851	1,049,318	768	2,875	2,572	156,955
TOTAL ASSETS	15,984,440	14,983,312	12,723,276	11,784,655	12,485,129	12,770,705
LIABILITIES						
CURRENT:						
Notes, Mortgages and Accounts, payable	2,988,314	2,054,711	2,051,798	997,933	1,093,942	822,912
Accrual wages, interest, etc	125,972	32,224	15,578	9,053	8,175	37,196
Reserves for taxes	261,983	236,969	30,884	34,362	98,581	148,354
Deposits on contracts	.....	.....	.....	8,100	26,755	211,263
Other current liabilities	35,829	21,569	3,715	.....	38,966	269,305
Total Current Liabilities	3,412,098	2,345,473	2,101,975	1,049,447	1,266,419	1,489,029
CAPITAL AND SURPLUS:						
Capital Stock and Capital Surplus	8,379,268	8,049,768	5,724,586	5,724,536	5,861,684	5,861,684
* Surplus—earned	1,409,419	1,152,432	1,485,358	1,622,126	2,128,118	5,253,927
Total Capital and Surplus	9,788,687	9,202,200	7,209,944	7,346,661	7,852,653	11,115,610
Reserves for contingencies, etc	2,783,655	35,853	3,411,357	3,388,546	3,366,056	.....
Other Liabilities	.....	3,399,786	.....	.....	.....	166,065
TOTAL LIABILITIES	15,984,440	14,983,312	12,723,276	11,784,655	12,485,129	12,770,705

*Some capital surplus included—not possible of definite determination.

APPENDIX V—(*Continued*)

MANUFACTURING GROUP—9 COMPANIES

Combination Balance Sheets as at December 31
Duplication Dropped

ASSETS	1927 (6)	1928 (11)	J. 29 (4)	1929 (9)	1930 (9)
CURRENT:					
Cash on hand and deposits	$ 1,354,266	$14,202,938	$10,384,106	$ 7,035,811	$ 4,613,448
Notes and accounts receivable	1,091,503	3,032,737	885,316	1,557,085	1,543,586
Government and listed securities	512,719	3,524,150	97,487	2,615,470	3,258,718
Merchandise Inventory	3,528,512	7,415,903	3,403,593	7,698,191	6,124,388
Other Current Assets	64,049	221,025	5,950	100,612	48,174
Total Current Assets	6,551,049	28,396,754	14,776,453	19,027,170	15,588,314
FIXED ASSETS:					
Property and Equipment	3,333,853	15,202,256	2,883,842	6,125,347	6,183,305
Goodwill, patents, etc	1,649,469	1,760,805	1,409,129	2,021,192	3,013,932
Other fixed assets	5,217	472,186	225,266	564,304	513,199
Total Fixed Assets	4,988,539	17,535,246	4,518,237	8,710,842	9,710,436
OTHER ASSETS:					
Deferred charges	207,265	674,238	92,277	971,004	336,830
Investments	4,158,679	1,586,966	25,874	24,249	263,418
Other	590,557	99,959	164,277	962,452	357,408
TOTAL ASSETS	16,496,090	48,193,163	19,577,217	29,695,718	26,256,407
LIABILITIES					
CURRENT:					
Notes, Mortgages and Accounts, payable	1,404,711	3,182,908	973,782	1,499,912	603,079
Accrual wages, interest, etc	91,946	413,514	72,497	170,079	198,641
Reserves for taxes	160,530	730,635	196,526	412,318	135,930
Deposits on contracts	523,958	508,875	98,965	360,869	124,359
Other current liabilities	35,433	73,020	.....	.....	9,465
Total Current Liabilities	2,216,577	4,908,953	1,341,770	2,443,178	1,071,474
CAPITAL AND SURPLUS:					
Capital Stock and Capital Surplus	7,270,885	36,854,999	17,647,332	22,946,676	25,431,839
* Surplus—earned	6,883,165	6,313,249	503,623	3,927,852	—1,494,918
Total Capital and Surplus	14,154,050	43,168,247	18,150,955	26,874,528	23,936,921
Reserves for contingencies, etc	.....	.....	71,344	355,526	984,265
Other Liabilities	125,463	115,963	13,148	22,485	263,747
TOTAL LIABILITIES	$16,496,090	$48,193,163	$19,577,217	$29,695,718	$26,256,407

* Some capital surplus included—not possible of definite determination.

OPERATING GROUP—4 COMPANIES

No Duplications

ITEMS NO. OF COS.:	1926 2	1927 2	1928 4	1929 4	1930 4
Net Worth	$951,556.54	$1,829,920.26	$10,317,308.33	$19,955,470.07	$19,669,722.07
Total Debt	34,723.76	420,879.13	340,572.42	973,270.51	2,167,590.84
Surplus	−178,943.46	126,636.22	490,150.32	107,585.87	−710,656.91
Current Debt	34,723.76	420,879.13	340,572.42	973,270.51	2,167,590.84
Current Assets	425,727.95	1,116,773.82	8,854,188.10	9,180,896.12	7,161,217.98
Net Wth.—T. Debt	985,880.30	2,250,799.35	10,657,880.75	20,928,740.58	21,837,312.91
Prop. and Eqpt	544,022.06	780,796.17	2,404,810.16	9,462,065.75	10,053,673.60
Sec. Inv.	10,062.50	22,400.00	2,511,807.40	2,639,444.36	260,137.72
Other Fix. Inv.	.....	.....	.....	.....	2,677,225.61
Fix. Inv.	10,090.63	259,878.01	1,050,724.88	1,832,080.46	3,920,218.08
Current Liab.	34,723.76	420,879.13	426,572.42	1,097,505.43	2,167,590.80
Net Wkg. Cap.	391,004.19	695,894.69	8,427,615.68	8,083,390.69	4,893,627.18
Fixed Assets	544,022.06	780,796.17	2,756,978.35	10,813,517.35	13,501,949.44
Oper. Revenues	393,099.56	1,194,199.00	3,478,065.32	9,900,873.93	11,590,515.91
Receivables	76,995.10	210,835.72	827,765.06	1,808,494.12	1,818,620.24
Merchandise Inv.	109,021.04	121,827.74	166,607.50	893,926.37	1,198,396.75
Net Earnings	−182,304.37[1]	−197,848.40[1]	973,230.85	241,443.53	23,444.29[2]
Capital Stock	1,130,500.00	1,703,284.00	9,567,146.20	16,498,056.69	20,004,376.01
Net Profits	−55,401.42	246,117.28	1,146,597.59	214,131.10	−22,293.02[2]
Total Capital	985,880.30	2,250,799.35	10,657,880.75	20,928,740.58	21,837,312.91
Net Income	−178,943.46	117,149.79	966,590.88	276,995.48	−1,201,125.03
Total Assets	1,119,221.87	2,507,105.54	13,348,691.75	22,486,887.65	27,604,682.66
Goodwill and Pat.	.....	.....	352,168.19	619,051.11	2,768,588.57

[1] No Western Air figures included.

[2] No Pan American Airways figures included.

APPENDIX X

OPERATING GROUP—4 COMPANIES

No Duplications

RATIOS	1926	1927	1928	1929	1930
Net Worth: Total Debt	2740	433	3029	2046	907
Surplus: Net Worth	−18	6.9	4.7	.5	−3.6
Current Debt: Total Debt	100	100	100	100	100
Current Debt: Net Worth	4	23	3	5	10
Current Assets: Net Worth—Total Debt	43	49	83	43	32
Property & Equipment: Net Wth.—Total Debt	55	34	22	45	45
Security Investments: Net Wth.—Total Debt	1	1	23	12	1
Other Fixed Investments: Net Wth.—Total Debt	.....	.....	.....	.....	12
Net Worth: Fixed Investments	98580	868	1009	1142	556
Current Assets: Net Worth	45	60	85	46	36
Current Assets: Current Liabilities	1220	265	2077	836	326
Net Working Cap.: Fixed Assets	71	89	306	74	36
Net Working Cap.: Operating Revenue	99	58	242	81	42
Net Working Cap.: Receivables	508	330	1010	446	270
Net Working Cap.: Merchandise	358	574	5072	904	410
Net Earnings: Net Worth	−19	−10.8	9.4	1.2	0
Net Income: Net Worth	18.7	6.4	9.3	1.3	−6.1
Net Worth: Capital Stock	84	107	107	121	98
Inventory: Fixed Assets	20	15	6	8	8.8
Operating Revenue: Current Assets	92	107	39	107	162
Net Profits: Total Assets	−4.9	9.8	8.5	1	−0
Operating Revenues: Total Capital	39	52	32	47	52
Net Sales: Fixed Assets	72	152	126	91	85
Fixed Assets: Total Capital	55	19	26	52	62
Other Assets: Total Capital	15	27	16	12	32
Net Worth: Fixed Assets—Investments	172	176	367	154	113
Merchandise: Receivables	142	57	20	49	66
Patents & Goodwill: Fixed Assets	.....	.....	12.8	5.7	20.4

APPENDIX Y

OPERATING COMPANY GROUP—4 COMPANIES
Combination Balance Sheets as of December 31, 1921–1930
(Individual items reduced to percentages of their respective total assets and liabilities)

ASSETS	1926	1927	1928	1929	1930
CURRENT:					
Cash in bank and on hand	18.0	29.0	40.0	11.6	7.3
Accts. and notes rec.	6.9	8.4	6.2	5.5	6.6
Marketable securities	.9	.9	18.8	8.0	.9
Inventories and supplies	9.8	4.9	1.3	2.7	4.4
Other current assets	2.6	1.3	.1	.0	6.5
Deposits	.....	.....	.....	.....	.....
Total Current Assets	38.1	44.5	66.3	27.6	25.5
FIXED:					
Bldgs., airports, imp., etc.	48.5	31.1	18.0	28.5	36.7
Goodwill, pat. devpt. etc.	.....	.....	2.6	1.9	10.0
Other fixed assets	.....	.....	.....	2.2	2.4
Total Fixed Assets	48.5	31.1	20.7	32.5	49.0
OTHER ASSETS:					
Deferred charges	.3	.9	.8	1.0	1.4
Investments	.9	10.4	7.9	5.5	14.2
Other	1.2	13.1	4.3	1.0	9.9
TOTAL ASSETS	100	100	100	100	100

LIABILITIES					
CURRENT:					
Notes and accounts pay.	3.1	16.3	2.4	2.8	7.6
Accruals	.....	.5	.1	.2	.3
Reserves for taxes, etc.	.....	.....	.7	.4	.....
Deposits on contracts	.....	.....	.....	.....	.....
Other current	.....	.....	.....	.....	.....
Total Current Liabilities	3.1	16.8	3.2	3.3	7.9
CAPITAL AND SURPLUS:					
Capital stk. and cap. sur.	101	68.0	76.5	62.0	84.0
Earned surplus	−16.0	5.1	3.7	.3	−2.7
Total Capital and Sur.	85.0	73.0	80.2	62.3	81.5
RESERVES FOR CONTINGENCIES	9.6	9.1	15.4	2.2	7.0
OTHER LIABILITIES	2.3	1.1	1.5	.3	3.9
TOTAL LIABILITIES	100	100	100	100	100

APPENDIX Z

Operating Group—4 Companies

Combination Balance Sheets as at December 31
No Duplications

ASSETS	1926 (2)	1927 (2)	1928 (4)	1929 (4)	1930 (4)
CURRENT:					
Cash in bank and on hand	$200,825	$728,462	$5,339,640	$3,835,693	$2,007,948
Accounts and notes receivable	76,995	210,836	827,765	1,808,494	1,818,620
Marketable securities	10,063	22,400	2,511,807	2,639,444	260,138
Inventories and supplies	109,021	121,828	166,608	893,926	1,198,397
Other current assets	28,824	33,248	8,368	3,338	1,776,115
Total Current Assets	$425,728	$1,116,774	$8,854,188	$9,180,896	$7,061,218
FIXED:					
Bldgs., airports, imp., etc	544,022	780,797	2,404,810	9,462,066	10,053,674
Goodwill, contr. and devpt	.....	.....	352,168	619,051	2,768,589
Other fixed assets	.....	.....	.....	732,401	679,687
Total Fixed Assets	$544,022	$780,796	$2,756,978	$10,813,517	$13,501,949
OTHER ASSETS:					
Deferred charges	3,417	21,618	111,098	322,190	393,902
Investments	10,091	259,978	1,050,725	1,832,080	3,920,218
Other	135,964	328,039	575,703	338,203	2,727,396
Total Assets	$1,119,222	$2,507,106	$13,348,692	$22,486,888	$27,604,683

APPENDIX Z—(*Continued*)

OPERATING GROUP—4 COMPANIES

LIABILITIES	1926 (2)	1927 (2)	1928 (4)	1929 (4)	1930 (4)
CURRENT:					
Notes and accts. pay	34,724	409,614	325,051	921,904	2,076,304
Accruals	.....	11,266	15,521	51,366	91,287
Reserves for taxes	.....	.....	86,000	124,235	.....
Other Current	.....	.....	.....	.....	.....
Total Current	$34,724	$420,879	$426,572	$1,097,505	$2,167,591
CAPITAL AND SURPLUS:					
Cap. stk. and cap. sur	1,130,500	1,703,284	10,179,326	20,466,935	23,148,968
Earned surplus	−178,943	126,636	490,150	107,586	−710,657
Total Cap. and Sur	951,557	1,829,920	10,669,477	20,574,521	22,438,311
RESERVES FOR CONTINGENCIES	106,804	228,563	2,054,098	715,968	1,921,623
OTHER LIABILITIES	26,138	27,744	198,545	98,893	1,077,159
TOTAL LIABILITIES	$1,119,222	$2,507,106	$13,348,692	$22,486,888	$27,604,683

APPENDIX AA

Auxiliary Group—5 Companies

Duplications Dropped

ITEMS NO. OF COS.	1926 1	1927 3	1928 5	J.29 2	1929 5	1930 5
Net Worth	$359,144.35	$2,508,733.99	$11,952,827.20	$35,104,667.19	$40,117,616.05	$33,989,808.39
Total Debt	17,011.54	675,566.38	3,333,186.41	2,570,032.68	2,987,105.17	2,196,157.91
Surplus	89,269.35	2,594,733.83	4,543,028.99	9,672,394.96	11,826,059.93	9,641,992.35
Cur. Debt	17,011.54	675,566.38	3,333,186.41	2,570,032.68	2,987,105.17	2,196,157.91
Cur. Assets	332,327.14	2,567,958.44	10,892,063.94	31,232,085.43	28,856,842.67	15,072,515.60
Net Wt.—T. Dbt	376,155.89	3,184,300.37	15,286,013.61	37,674,699.87	43,104,721.22	36,185,966.30
Prop. and Eqpt	60,830.62	1,315,745.16	2,304,614.87	8,954,066.49	14,553,759.63	18,294,846.55
Sec. Inv.	.....	.....	7,935.00	2,620,168.39	1,822,061.56	680,074.30
Other Fix. Inv	.....	125,153.08	573,741.78	297,735.52	3,727,320.84	92,107.19
Fix. Inv	.....	.....	8,424,600.00	774,500.06	91,727.50	3,769,362.70
Cur. Liab	17,011.54	803,266.38	3,682,472.91	2,772,782.76	3,913,023.04	2,775,768.10
Net Wkg. Cap	315,315.60	1,764,692.06	7,209,591.03	28,459,302.67	24,943,819.63	12,296,747.50
Fix. Assets	60,830.62	5,285,231.13	6,820,316.69	38,871,794.26	47,889,686.71	55,132,592.51
Net Sales	218,808.86	.....	.....	.....	.....	.....
Receivables	26,239.93	892,218.45	1,510,719.75	3,375,509.91	2,855,265.03	2,664,314.17
Merchan. Inv	278,997.98	1,327,171.54	2,060,254.78	4,235,506.74	5,945,784.23	5,391,375.60
Net Earn	35,246.33	822,062.61	3,067,655.67	5,925,026.76	9,041,833.31	1,456,404.61
Cap. Stock	269,875.00	3,883,486.13	8,175,500.03	55,350,000.00	60,217,820.75	60,570,369.07
Net Profits	35,326.23	1,115,850.55	3,572,336.90	6,627,034.72	7,929,333.42	1,218,019.51
Total Capital	376,155.89	3,184,300.37	15,286,013.61	37,674,699.87	43,104,721.22	36,185,966.30
Net Income	−29,158.11	660,703.99	2,673,621.90	5,165,967.82	8,022,430.34	1,157,649.60
Total Assets	395,155.89	8,382,534.85	27,092,335.04	71,900,354.99	81,375,652.45	74,853,950.02
Goodwill and Pat	.....	3,969,485.97	4,515,701.82	29,917,727.77	33,303,450.68	36,745,638.83

APPENDIX BB

Auxiliary Group—Five Companies

Duplications Dropped

RATIOS	1926	1927	1928	J.29	1929	1930
Net Worth: Total Debt.	2111	371	357	1365	1345	1547
Surplus: Net Worth....	24.8	103	38.1	27.5	29.4	28.4
Current Debt: Total Debt.....	100	100	100	100	100	100
Current Debt: Net Worth.....	4.7	27	27	7.3	7.4	6.4
Current Assets: Net Worth—T. Debt...	88	80	71	82	66	41
Property & Equip.: Net Wth.—T. Debt.....	16	41	15	23	33	50
Security Inv.: Net Wth. —Total Debt.....	.....	.....	0	6.9	4.2	1.9
Other Fix. Inv.: Net Wth. —Total Debt.....	.....	3.9	3.7	1	8.6	.2
Net Wth.: Fixed Investments.....	.....	.....	141	4534	43729	901
Current Assets: Net Worth.....	92	102	90	88	71	44
Current Assets: Current Liabilities.....	1950	318	293	1126	736	541
Net Wkg. Capital: Fixed Assets.....	518	33	105	73	52	22
Net Wkg. Cap.: Sales..	144	.....	.....	.....	.....	.....
Net Wkg. Cap.: Receivables.....	1202	197	476	842	873	458
Merchandise.....	113	133	349	671	419	226
Net Earnings: Net Worth.....	9.9	32	25	16	22	4.2
Net Income: Net Worth	−8.1	26	22	14	20	3.3
Net Worth: Capital Stock.....	133	64	145	63	66	56
Inventory: Fixed Assets.	457	25	30	11	12.4	9.7
Net Sales: Current Assets	65	.....	.....	.....	.....	.....
Net Profits: Total Assets	8.9	13.2	13.2	9.2	9.7	1.6
Fixed Assets: Total Capital.....	16	166	45	104	111	153
Other Assets: Total Capital.....	.5	17	61	4.8	10.8	12.8
Net Worth: Prop. & Eqpt.—Inv.....	591	191	112	362	274	282
Merchandise: Receivables.....	1058	143	137	125	208	203
Patents & Goodwill: Fixed Assets.....	.....	75	66	77	69	66

APPENDIX CC

AUXILIARY GROUP— 5 COMPANIES
Combination Balance Sheets as of December 31
(Individual items reduced to percentages of their respective total assets and liabilities)

ASSETS	1926	1927	1928	J.29	1929	1930
CURRENT:						
Cash in bank and on hand	5.6	4.0	26.9	29.1	22.3	8.3
Accounts and notes receivable	6.6	10.7	5.5	4.7	3.5	3.6
Marketable securities	.....	.....	.3	3.7	2.2	.9
Inventories and supplies	70.5	15.8	7.6	5.9	7.3	7.2
Other current assets	1.3	.1	.4	.1	.0	.2
Deposits	.....	.....	.....	.....	.....	.....
Total Current Assets	84.0	30.5	40.3	43.4	35.5	20.2
FIXED:						
Bldgs., airports, impr. etc.	15.4	15.6	8.5	12.5	17.9	24.5
Goodwill, patents, devpt. etc.	.....	47.3	16.7	41.5	40.9	49.2
Other fixed assets	.....	.....	.....	.....	.0	.1
Total Fixed Assets	15.4	62.9	25 2	54.0	58.8	74.0
OTHER ASSETS:						
Deferred charges	.5	4.8	1.1	.3	.0	.7
Investments	.....	.....	31.1	1.1	.1	5.1
Other	.....	1.5	2.4	1.3	5.5	.5
TOTAL ASSETS	100	100	100	100	100	100
LIABILITIES						
CURRENT:						
Notes and accounts payable	4.3	4.5	4.7	3.0	1.7	1.5
Accruals	.....	2.8	6.5	.6	1.3	.7
Reserves for taxes, etc.	.....	1.5	1.3	.3	1.1	.8
Deposits on contracts	.....	.....	1.0	.....	.0	.1
Other current liabilities	.....	.7	.1	.0	.7	.7
Total Current Liabilities	4.3	9.6	13.6	3.9	4.8	3.7
CAPITAL AND SURPLUS:						
Capital stock and capital surplus	68.2	46.2	44.0	77.0	75.5	82.0
Earned surplus	22.6	30.8	16.8	13.5	14.5	12.9
Total Capital and Surplus	91.0	77.0	61.0	90.5	90.0	95.0
RESERVES FOR CONTINGENCIES	4.8	.3	.6	2.1	.8	1.1
OTHER LIABILITIES	.....	12.9	25.0	3.7	4.1	.6
TOTAL LIABILITIES	100	100	100	100	100	100

APPENDIX DD

Auxiliary Group—5 Companies

Combination Balance Sheets as of December 31, 1926–1930
Duplications Dropped

ASSETS	1926 (1)	1927 (3)	1928 (5)	J.29 (2)	1929 (5)	1930 (5)
CURRENT:						
Cash on hand and dep.	$ 21,995	$ 338,568	$ 7,302,883	$20,945,811	$18,230,597	$ 6,223,302
Notes and Accts. rec.	26,240	892,218	1,510,720	3,375,510	2,855,265	2,664,314
Govt. and listed sec.	.....	.....	7,935	2,620,168	1,822,062	680,074
Mdse. Inventory	278,998	1,327,172	2,060,255	4,235,507	5,945,784	5,391,376
Other current assets	5,084	10,000	10,271	55,090	3,135	113,450
Total Current Asset	$332,327	$2,567,958	$10,892,064	$31,232,085	$28,856,843	$15,072,516
FIXED ASSETS:						
Property and Equipment	60,831	1,315,745	2,304,615	8,954,066	14,553,760	18,294,847
Goodwill, patents, etc.	.....	3,969,486	4,515,702	29,917,728	33,303,451	36,745,639
Other fixed assets	.....	.....	.....	.....	32,476	92,107
Total Fixed Assets	$ 60,831	$5,285,231	$ 6,820,317	$38,871,794	$47,889,687	$55,132,593
OTHER ASSETS:						
Deferred charges	1,998	404,192	300,602	121,007	29,008	542,546
Investments	.....	.....	8,424,600	774,500	91,728	3,769,363
Other	.....	125,153	654,753	900,968	4,508,378	336,933
Total Assets	$395,156	$8,382,535	$27,092,335	$71,900,355	$81,375,642	$74,853,950

APPENDIX DD—(*Contiued*)

AUXILIARY GROUP—5 COMPANIES
Combination Balance Sheets as of Decembe, 31, 1926–1930
Duplications Dropped

LIABILITIES	1926 (1)	1927 (3)	1928 (5)	J 29 (2)	1929 (5)	1930 (5)
CURRENT:						
Notes, mtgs. and accts. payable	17,012	377,423	1,278,818	2,128,362	1,353,238	1,145,843
Accrued wages, int., etc.	.....	236,500	1,749,109	431,713	1,079,694	487,334
Reserves for taxes	.....	127,700	349,287	202,750	925,918	579,610
Deposits on contracts	.....	.....	24,980	.....	19,986	37,500
Other current liabilities	.....	61,644	280,270	9,958	534,186	525,480
Total Current Liability	$ 17,012	$ 803,266	$ 3,682,473	$ 2,772,783	$ 3,913,023	$ 2,775,768
CAPITAL AND SURPLUS:						
Cap. stk. and cap. surplus	269,875	3,883,486	11,925,500	55,350,000	61,657,820	61,210,664
Surplus—earned	89,269	2,594,734	4,543,029	9,672,395	11,826,060	9,641,992
Total Cap. and Surplus	$359,144	$6,478,220	$16,468,529	$65,022,395	$73,483,881	$70,852,656
RESERVES FOR CONTINGENCIES	19,000	25,000	153,685	1,487,857	647,277	805,366
OTHER LIABILITIES	.....	1,076,049	6,787,649	2,617,321	3,331,471	420,160
TOTAL LIABILITIES	$395,156	$8,382,535	$27,092,335	$71,900,355	$81,375,642	$74,853,950

APPENDIX EE

HOLDING COMPANY GROUP—7 COMPANIES
No Duplications

ITEMS	1925 (1)	1926 (1)	1927 (2)	1928 (4)	J.29 (6)	1929 (7)	1930 (6)
Net Worth	$179,416	$283,857	$1,138,244	$51,167,239	$187,819,053	$167,311,770	$148,030,754
Total Debt	96,622	100,172	531,207	2,929,993	7,848,987	16,119,059	8,704,945
Surplus	86,988	189,490	239,021	1,656,835	14,241,024	2,008,541	−18,615,657
Cur. Debt	96,622	100,172	531,207	2,786,896	7,820,987	13,931,509	7,530,633
Cur. Assets	497,413	547,547	1,623,392	38,032,331	119,929,719	103,235,463	73,915,510
Net. Wth.—T. Dbt	276,037	384,029	1,669,451	54,097,232	195,668,040	183,430,828	156,735,698
Prop. and Equip	91,577	130,801	461,380	4,122,800	54,395,561	74,767,698	74,609,048
Sec. Inv	.....	.....	.....	6,750,578	24,195,660	29,988,828	34,335,548
Other Fix. Inv	.....	.....	.....	.....	586,771	704,805	156,640
Fix. Inv	19,639	50,107	95,705	12,508,625	21,426,557	14,888,861	16,733,122
Cur. Liab	110,823	120,059	555,684	2,815,940	8,151,972	15,568,942	8,051,034
Net Wkg. Cap	386,590	427,488	1,067,708	35,216,391	111,777,748	87,666,521	65,864,476
Fix. Assets	255,218	301,088	1,417,720	5,754,649	64,090,297	77,838,890	76,857,804
Net Sales	647,108	857,626	2,528,605	22,386,543	32,678,296[1]	67,614,862	55,450,252
Receivables	440,072	437,265	994,372	4,132,957	6,224,919	9,079,208	7,917,158
Merchandise Inv	26,636	85,143	493,894	4,202,513	16,695,472	23,450,724	18,418,859
Net Earnings	76,546	115,550	144,396[2]	5,523,924	10,448,366[1]	12,111,182	−3,470,504
Capital Stock	224,241	226,301	1,813,347	49,699,609	166,684,214	160,952,083	148,581,443
Net Profits	.....	.....	253,045[2]	5,296,425[3]	7,601,171[1-4]	8,632,812	−5,820,495
Total Capital	276,037	384,029	1,669,451	54,097,232	195,668,040	183,430,828	156,735,698
Net Income	46,004	101,739	121,762[2]	4,687,423	8,455,559[1]	5,687,349	−9,688,016
Total Assets	772,269	898,741	3,153,004	56,557,226	208,329,018	199,729,139	170,615,845
Goodwill and Pat	131,814	131,934	914,124	1,510,563	9,694,736	3,030,676	2,217,565

[1] Detroit Aircraft figures missing
[2] Fairchild figures missing
[3] Alexander Industries figures missing
[4] Aviation Corporation figures missing

APPENDIX FF

HOLDING COMPANY GROUP—7 COMPANIES
No Duplications

RATIOS	1925	1926	1927	1928	J.29	1929	1930
Net Wth.: Total Debt..	186	284	214	1744	2393	1163	1700
Surplus: Net Worth....	48	67	21	3	8	1	−13
Cur. Debt.: Total Debt.	100	100	100	95	99.6	86	87
Cur. Debt.: Net Worth..	54	35	47	5	4	8	5
Cur. Assets: Net Wth.—T. Debt.....	180	142	97	70	61	56	47
Prop.: Net Wth.—Total Debt.....	33	34	27	8	27	40	47
Sec. Inv: Net Wth.—T. Debt.....	....	....	....	12	12	16	22
Other Fix. Inv.: Net Wth.—T. D.....	....	....	....	....	.3	.4	.1
Net Wth.: Fix. Inv.....	913	566	1189	409	876	1124	885
Cur. Assets: Net Worth.	277	192	142	743	64	62	50
Cur. Assets: Cur. Liabilities.....	448	456	292	1350	1470	663	918
Net Wkg. Cap.: Fixed Assets.....	151	142	75	611	174	112	86
Net Wkg. Cap.: Sales..	59	50	42	157	341	129	118
Net Wkg. Cap.: Receivables.....	87	98	107	852	1794	965	831
Net Wkg. Cap.: Merchandise.....	1451	502	216	837	669	374	357
Net Earnings: Net Wth..	43	40	12.6	10.6	5.5	7.2	−2.3
Net Income: Net Wth...	26	36	11	9.1	4.5	3.4	−6.5
Net Worth: Capital Stock.....	80	130	63	103	113	104	99.6
Merchandise Inv.: Fixed Assets.....	10.4	28.2	34.9	73.0	26	30	24
Net Sales: Cur. Assets..	130	156	154	59	27	65.5	75
Net Profits: Total Assets	....	....	8.0	9.3	3.6	4.3	−3.4
Sales: Total Capital....	234	223	151	41	17	37	35
Net Sales: Fixed Assets.	253	284	178	389	51	87	72
Fixed Assets: Total Capital.....	92	78	85	10.6	33	43	49
Other Assets: Total Capital.....	7	13	7	24	12.4	10.2	12.4
Net Worth: Property—Inventory.....	171	157	205	308	247	186	182
Merchandise: Receivables.....	6.0	19.5	49.5	102	268	258	232
Patents and Goodwill: Fixed Assets.....	51	43	64	26	15	4	3

APPENDIX GG

HOLDING COMPANY GROUP

Combination Balance Sheets as at December 31
(Totals reduced to percentages of their respective total assets and liabilities)

ASSETS	1925	1926	1927	1928	J.29	1929	1930
CURRENT:							
Cash on hand and deposit	.6	.8	2.0	39.6	33.5	20.2	7.7
Notes and Accounts receivable	57.0	48.7	31.5	7.3	3.1	4.5	4.7
Govt. and listed securities	...	...	...	11.9	12.2	15.0	20.2
Merchandise Inventory	3.4	9.5	15.6	7.4	8.3	11.8	10.8
Deposits	...	...	...	...	.4	.2	.0
Other current assets	3.5	2.0	2.2	.9	.9	.0	.0
Total Current Assets	64.5	60.7	51.3	67.5	58.5	51.5	43.5
FIXED ASSETS:							
Prop. and equipment	11.9	14.5	14.6	7.3	15.7	33.2	42.0
Goodwill, patents, etc.	17.0	14.6	28.9	2.7	3.2	1.5	1.3
Other fixed assets	4.1	4.3	1.3	.2	11.0	4.2	1.9
Total Fixed Assets	33.1	33.5	45.0	10.2	29.9	39.0	45.2
OTHER ASSETS:							
Deferred charges	...	...	.5	.5	.2	.5	.4
Investments	2.5	5.6	3.0	22.1	10.8	7.5	10.0
Other	...	...	...	...	.9	1.4	1.4
TOTAL ASSETS	100	100	100	100	100	100	100

LIABILITIES							
CURRENT:							
Notes, accounts, mtgs. pay.	3.4	5.1	11.2	2.9	2.0	5.7	3.4
Accrued wages, int., etc.	9.1	5.9	3.8	1.9	1.0	.7	.6
Reserves for taxes	1.8	2.2	.5	.0	.2	.7	.3
Due on deposit	...	...	1.7	.2	.9	.7	.4
Other current liabilities	.0	...	.2	.0	...	.1	.0
Total Current Liabilities	14.3	13.4	17.6	5.0	4.0	7.8	4.7
CAPITAL AND SURPLUS:							
Capital stock and cap. sur.	29.1	25.2	57.3	90.2	88.0	85.0	99.3
Surplus—earned	11.2	21.1	7.6	2.9	7.2	1.0	−10.9
Total Cap. and Surplus	40.3	46.4	64.9	93.1	95.0	86.0	88.4
RESERVES FOR CONTINGENCIES:	...	...	.3	.2	.4	.8	4.3
OTHER LIABILITIES	45.4	40.4	14.7	1.6	.8	5.6	2.7
Total Liabilities	100	100	100	100	100	100	100

APPENDIX HH

Holding Company Group—7 Companies

Combination Balance Sheets as at December 31

ASSETS	1925 (1)	1926 (1)	1927 (2)	1928 (4)	J.29 (6)	1929 (7)	1930 (6)
CURRENT:							
Cash on hand and dep.	$ 4,299	$ 7,406	$ 64,267	$22,409,942	$ 70,326,837	$ 40,280,880	$13,129,707
Notes and accts. rec.	440,072	437,265	994,372	4,132,957	6,223,769	9,079,208	7,917,158
Govt. and list. sec.	.....	.....	.....	6,750,578	24,195,660	29,988,828	34,335,548
Mdse. Inventory	26,636	85,143	493,894	4,202,513	16,695,472	23,450,725	18,418,859
Deposits	.....	.....	.....	.....	721,477	382,159	58,538
Other current assets	26,407	17,732	70,859	536,341	1,766,504	53,663	55,698
Total Current Assets	$497,413	$547,547	$1,623,392	$38,032,331	$119,929,719	$103,235,463	$73,915,510
FIXED ASSETS:							
Prop. and Eqpt.	91,577	130,801	461,380	4,122,800	54,395,561	74,767,698	74,609,048
Goodwill, patents, etc.	131,814	131,934	914,124	1,510,563	9,694,736	3,030,676	2,217,565
Other fixed assets	31,827	38,353	42,215	121,285	.....	40,516	31,192
Total Fixed Assests	$255,218	$301,088	$1,417,720	$ 5,754,649	$ 64,090,297	$ 77,838,890	76,857,804
OTHER ASSETS:							
Deferred charges	.....	.....	16,187	261,621	550,472	989,554	663,103
Investments	19,639	50,107	95,705	12,508,625	21,426,557	14,888,861	16,733,122
Other	.....	.....	.....	.....	2,330,992	2,776,372	2,133,027
Total Assets	$772,269	$898,741	$3,153,004	$56,557,226	$208,329,018	$199,729,139	$170,615,845

APPENDIX H H *(Continued)*

HOLDING COMPANY GROUP—7 COMPANIES

Combination Balance Sheets as at Dec 31

LIABILITIES	1925	1926	1927	1928	J. 29	1929	1930
CURRENT:							
Notes, mtgs. and accts. payable	$ 26,581	$ 46,180	$ 353,268	$ 1,627,977	$ 4,082,961	$ 11,336,035	$ 5,789,307
Accr. wages, int. etc	69,674	53,992	121,060	1,064,437	1,974,344	1,452,558	1,083,171
Reserves for taxes	14,201	19,887	15,917	16,511	330,984	1,296,558	430,337
Due on deposits	.....	.....	54,808	101,812	1,763,682	1,466,263	743,502
Other current liabilities	367	.....	10,631	5,203	.....	17,528	4,718
Total Current Liabilities	$110,823	$120,059	$555,684	$2,815,940	$ 8,151,971	$ 15,568,942	$ 8,051,034
CAPITAL AND SURPLUS:							
Capital stock and cap. sur	224,241	226,301	1,813,347	51,020,967	182,982,811	169,577,861	169,267,714
Surplus earned	86,988	189,490	239,021	1,656,835	14,241,024	2,008,541	—18,615,657
Total Capital and Surplus	$311,229	$415,791	$2,052,368	$52,777,802	$197,223,835	$171,586,402	$150,652,057
RESERVES FOR CONTINGENCIES	.....	.....	79,873	139,760	761,143	1,518,599	7,360,423
OTHER LIABILITIES	350,217	362,892	465,078	923,724	2,192,067	11,055,196	4,552,331
Total Liabilities	$772,269	$898,741	$3,153,004	$56,557,226	$208,329,018	$199,729,139	$170,615,845

APPENDIX II

Brokerage Houses Underwriting New Aviation Security Issues

DATE 1928	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
January.....	.....	.....	.....	None	.....
February....	.....	.....	.....	None	.....
March.....	New plant	$500,000	Pr. on appli.	Curtiss-Robertson	Knight, Dysart and Gamble, St. Louis
April.....	New fac. and other purp.	300,000	Pr. on appli.	Alexander, Ind., Inc.	Thos. E. Fisher, Denver
	Retire preferred stk.	3,779,672	.....	Curtiss Aero. and Motor	Company to stockholders
May.....	Provide for inv. etc.	2,000,000	.....	Aero. Industries, Inc.*	W. W. Townsend & Co., Inc.
June.....	Acquisitions, expan.	1,000,000	.....	National Air Trans.	Company to stockholders
	Inv. in avia. enterpris.	3,525,000	23½	National Aviation Corp.*	G. M. P. Murphey & Co.
					James C. Willson & Co.
	Plant ext., wkg. cap.	5,000,000	100	Wright Aero. Corp.	Co. to stockhold.: underwr.
July.....	.....	.....	.....	None	.....
August.....	New plant and lab.	280,000	7	Consol. Instr. Co.	Marlon S. Emery & Co., Inc.
					Cook, Galt & Co.
	Acquisition, expan.	625,000	12½	U. S. Air Trans., Inc.	Billings, Ward & Co., Inc.
September...	Expan. of mfg. facil.; wkg. cap.	5,814,933	100	Curtiss Aero. & Motor	Company to stockholders
	Exp. of factory	9,450,000	14	Curtiss Flying Service	James C. Willson & Co.
					National Aviation Corp.
October.....	Cap. stk., new fac. eqpt.	675,000	7½	Amer. Eagle Aircr. Corp.	A. A. Durant & Co., Inc.
	Acquis. of prop. imp., etc.	550,000	10	Central Airport, Inc.	J. A. Sisto & Co.
	Devpt. of business.....	750,000	15	Crescent Airc. Corp.	Benedict, Wolf & Co., Inc.
	Working Capital	1,870,000	22	Fairchild Aviation Corp.	Privately by Hitt, Farwell & Co.
	Exp. of business	1,050,480	20	Keystone Aircraft Corp.	Co. to stockhold.-Underwr.
	Fin. Man. of prod.	705,000	23½	Moth Aircraft Corp.	J. A. Ritchie & Co., Inc.
					Pratt & Co.

APPENDIX II—(*Continued*)

DATE 1928	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
	Acquire pred. co.	1,250,000	12½	Sikorsky Av. Corp.	James C. Willson & Co. National Aviation Corp. G. M. P. Murphey & Co.
	Inv. purposes	4,025,000	35	Aero Underwriters*	Paine-Webber & Co. Fuller, Richter, Aldrich & Co., Hartford, Conn. J. A. Sisto & Co. Mackubin, Goodrich & Co., Baltimore
November ..	Acq. int. in av. cos.	2,160,000	36	Air Investors, Inc.*	Myron S. Hall & Co. Jackson, Storer & Co., Boston O'Brien, Potter & Stafford, Buffalo
	Exp. of business	2,972,750	23½	Bellanca	L. Sherman Adams, Boston
	Devpt. of plant and trans. facilities	5,310,000	10 shs. pfd. and 3 com. $590.	Boeing Air. & Trans.	National City Co.
	Exp. of business	131,250	17½	Cessna Aircraft Co.	E. H. Holmes & Co.
	Acq. and enlarge.	4,900,000	24½	Great Lakes Airc. Corp.	A. B. Leach & Co., Inc. Harry C. Watts & Co., Inc. Paul H. Davis & Co.
November ..	Exp. for business	360,000	15	Swallow Airplane Co.	E. H. Holmes & Co.
	For inv. purposes	4,299,995	17½	Universal Aviation Corp.*	Hambleton & Co., Inc. Pynchon & Co., Inc. Love, Bryan & Co., Inc. Frances Bros. & Co. Lane, Piper & Jaffray, Inc. McGowen, Cassedy & White
December...	Exp. of fac; wkg. cap.	350,000	1 sh. pfd. 2 com. $50	Aero. Corp. of Cal.	Offered by company

APPENDIX II—(*Continued*)

DATE 1928	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
	Acq. of plant	1,392,000	12	Aeromarine Klemm Corp.	Offered by company to stockhold.—underwritten
	Fin. av. cos.....	3,525,000	23½	Aviation Sec. Corp.*	Brokaw & Co., Chicago
	Acq.; exten.; wkg. cap.	1,275,000	7½	Coastal Airways, Inc.	R. F. Deane Corp.
	New fac.; wkg. cap.	300,000	25	Columbus Aircraft	Offered by company Stevenson, Vercoe, Fuller & Lorenz Hugh M. Archer & Co. Will J. Thompson Co. Claude Meeker Eugene Gray & Co. O'Brien & Laning Fred W. Freeman Ray T. Bower All of Columbus, Ohio
	Acq. pred. co.	1,275,000	30	Curtiss-Reid	Pottor & Co. Greenshields & Co.
	Retire pfd. stk. and debt, addns., etc.	750,000	6	Lockheed Aircraft	Company to stockholders
	Retire exist. debt, equip. and wkg. cap.	1,937,500	.....	Maddux Air Lines	Blair & Co., Inc. Bond & Goodwin & Tucker, Inc.
	Inv. and acquisition	30,000,000	15	North Am. Aviation	Blair & Co., Inc. James C. Willson & Co. Blyth, Witter & Co. E. A. Pierce & Co. Hemphill, Noyes & Co. E. H. Rollins & Sons F. B. Keech & Co. G. M. P. Murphy & Co.

APPENDIX II—(*Continued*)

DATE 1928	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
					Janney & Co. National Av. Corp. Knight, Dysart & Gamble Oliver J. Anderson & Co. Bond & Goodwin & Tucker Hunter, Dulin & Co.
	Acq. and imp. of prop.; wkg. cap.	2,760,000	15	Philadelphia Air Term.	Orton, Kent & Co.
	Acq., develop. etc.	1,050,000	8 sh. pfd. and 1 sh. com. $21	Pickwick Airways, Inc.	Company
1929					
January.....	Retire notes and other debt	4,230,000	90	Bendix Corp.	Company to stockholders
	Acq. and other corp. pur.	562,500	12½	Consol. Instrument Co. of America	Marlon S. Emery & Co.
	Acq. plant, devpt., etc.	2,500,000	12½	Curtiss-Caproni Corp.	G. M. P. Murphy & Co. James C. Willson & Co. Beucomit Corp. National Avia. Corp.
	Exp. and wkg. cap.	15,000,000	10 shs. pfd. 4 com. for $1000	United Aircraft & Transport Corp.	National City Co.
February....	Acq. and oth. corp. pur.	2,500,000	25	Aviation Corporation of Cal.	Bond & Goodwin & Tucker Hemphill, Noyes & Co. James C. Willson & Co.
	Acquisition, etc.	1,000,000	20	Berliner-Joyce Air. Corp.	Townsend Scott & Son Burden & Burden, Inc. Ralph B. Leonard & Co.
	Acq.; wkg. cap.	660,000	16½	Dayton Air. Engine Co.	R. G. Harper & Co.

APPENDIX II—(*Continued*)

DATE 1929	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
	Gen. corp. purposes	820,000	20½	Nicholas-Beasley Air. Co.	W. M. Madden & Co. Frear & Co. Paul Brown & Co. Oliver J. Anderson & Co. Knight, Dysart & Gamble Mark C. Steinberg & Co.
	Exp. etc.	500,000	12½	U. S. Air Transport, Inc.	Offered by Company
March	Fin. mfg. of planes, etc.	3,400,000	17	Acosta Aircraft Corp.	L. Raymond & Co., Inc.
	Wkg. cap.	750,000	15	Burnner-Wimble Air. Corp.	Marlon S. Emery & Co.
	Pay mtgs., constr. etc.	1,890,625	12½	Central Airport, Inc.	Janney & Co. Edward B. Smith & Co. James C. Willson & Co.
	Acquire pred. co.	875,000	10	Lincoln Aircraft	A. A. Durante & Co.
	Acquire prop. etc.	5,400,000	18	Roosevelt Field, Inc.	Edward B. Smith & Co. Chas. D. Barney & Co. Hitt, Farwell & Co. Pynchon & Co. Janney & Co. Mitchell Hutchins & Co. The Aviation Corp.
	Acq. const. cos.	1,400,000	14	Southern Air Transport	James C. Willson & Co. Watson, Williams & Co., New Orleans
	Acq. and operation	1,250,000	12½	Stout D & C Air Lines	O'Brien, Potter & Stafford Air Investors, Inc. Marine Union Investors Iroquois Shore Corp. Glenny Monro & Moll Herrick & Co. Liberty Share Corp. Hayes & Collins

APPENDIX II—(*Continued*)

DATE 1929	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
	Inv. purposes	2,100,000	42	Airstocks, Inc.*	White, Weld & Co.
March.....	Acquisitions	40,000,000	20	Aviation Corporation	Lehman Bros. W. A. Harriman & Co., Inc. Hallgarten & Co. Chas. D. Barney & Co. Edward B. Smith & Co. Guardian Detroit Co., Inc. Pynchon & Co. Hitt Farwell & Co. E. F. Hutton & Co. Lane, Pipe & Jaffray, Inc. Air Investors, Inc. Jessup & Lamont Rodgers Caldwell & Co., Inc. Pask Walbridge Halle & Stieglitz
	Inv. purposes	3,500,000	23½	Aviation Security Corp. of New England*	Hayden, Stone & Co. Jackson & Curtis James C. Willson & Co.
	Cap. stk.	3,500,000	17½	Inter-Allied Aero., Inc.	Bertram A. Unger & Co., Inc.
April.....	Acq. pred. cos.; wkg. cap.	1,595 000	14½	Allied Aviation, Inc.	Love, Bryan & Co., Inc. Augustine & Co., St. Louis
	Acqp. plant; other corp. purposes	2,887,500	1 sh. A ½ sh. B 27½	Am. Aero. Corp.	Brickhouse & Co., Inc.
	Retire debt; wkg. cap.	562,500	12½	Arrow Airc. & Motors Corp.	Woods Faulkner & Co., Chgo.
	Exp. of business	750,000	25	Elias Aircraft and Mfg. Corp.	Lowell Underwriters, Inc., Buffalo Harry Thompson & Co., Inc.
	Acq.; exp.	4,500,000	15	Gen. Aero. Corp. of Am.	E. H. Holmes & Co., Inc.

APPENDIX II—(*Continued*)

DATE 1929	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	OFFERED BY
	Wkg. cap.	50,000	25	Utica Flying Service, Inc.	A. J. Callahan, Utica Avery Horton, Utica R. B. Vermulya, Oneonta, Oneonta, N. Y.
May.....	Devpt. of operations	425,000	8½	Atlantic Air Service, Inc.	Armstrong & Co.
		750,000	15	Atlantic Seaboard Airways, Inc.	Chas. S. Rodd & Co., Inc.
	Eqpt., constr., etc.	150,000	2 shs. pfd. 1 sh. com. $30	Continental Air Exp.	C. W. Glanz & Co., L. A.
	Cap. stk., acq., other corp. purposes	31,250,000	12½	Curtiss Airports Corp.	Blair & Co., Inc. James C. Willson & Co. Hemphill, Noyes & Co. Hayden, Stone & Co. Hornblower & Weeks Spencer Trask & Co. E. A. Pierce & Co. G. M. P. Murphy Co. Bond & Goodwin Tucker, Inc. Watson, Williams & Co. North Am. Aviation, Inc. National Aviation Corp.
	Cap. stk., acq.	500,000	5	Gen. Aviation Corp.	De Respinis & Co., L. A.
	Devpt. of operations	259,200	6	International Air. Corp.	H. S. Robinson & Co., Detroit
June.....	Acq.,; expan.	328,000	2	Aero. Corp. of Cal.	Company to stockholders
	Cap. stk., add. cap.	2,250,000	3¾	Am. Eagle Aircraft Corp.	Company to stockholders
	Acq., devpt.	620,000	15½	Breese Aircraft Corp.	Matten, Tracy Co.
June.....	Retire pref. stk., other corp. pur.	1,200,000	40	Curtiss-Robertson Airplane Mfg. Co.	Mortgage Bond & Acceptance Corp., Portland Co. to stockholders.
	Retire debt; wkg. cap.	4,500,000	15	Detroit Aircraft Corp.	August Belmont & Co.

APPENDIX II—(*Continued*)

DATE 1929	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	ORDERED BY
	cap., etc.				H. W. Noble & Co. Knight, Dysart & Gamble
		495,000	1 sh. pfd. 1 com. $20	Sierra-Pacific Air Transit	Atterbury-Buckley Co., San Francisco
	New plant, wkg. cap.	100,000	10	Texas Aero Corp.	Thomas Investment Co., Dallas
	Add. cap. stk.	1,200,000	30	United Aircraft & Trans.	Co. to directors and employees
	Provide add. facil.	1,204,605	45	Western Air Express Corp.	Co. to stockholders
	Inv. in avia. ind.	3,525,000	23½	St. Louis Aviation Corp.	Knight, Dysart & Gamble
July.....	New plant, other corp. purposes	400,000	99½	Aircraft Plywood Corp.	Baillargeon, Winslow & Co. First Securities Co., Seattle
	Acq. const. cos.	1,754,049	17½	Aero Corp of America.	S. P. Woodward & Co., Inc.
	New plant, expan., etc.	675,000	15	Axelson Aircraft Engine Co.	Dean Witter & Co., California Co.
	Devpt. airport, wkg. cap.	375,000	10	Chicago Air Service, Inc. (Del.)	Harry C. Watts & Co., Inc. Florian, Plant & Co.
	Additions	940,000	23½	Ex-Cell-O Aircraft and Tool Corp. (Mich.)	Baker, Simonds & Co., Inc.
	Expan., wkg. cap.	1,250,000	25	Szekely Aircraft & Engine Co.	Stark & Co., Inc.
August.....	Acq. const. cos.	1,312,500	1 sh A ½ sh B. $26¼	Airports & Tool Corp. (Mich.)	J. D. Currie & Co., Detroit
	Fin. devpt. of bus.	400,000	10	Airport Lighting, Inc.	Klopstock & Co., Inc.
	Wkg. cap.	160,000	8	Atlantic Coast Airways Corp.	Burns, Saunders & Tausch Inc.
	Add. mfg. facil.	875,000	12½	Eastern Aircraft Corp.	Chas. S. Rodd & Co., Inc.
	Retire debt, impts., etc.	1,800,000	15	Fairfax Airports, Inc.	Woods, Faulkner & Co. Studebaker Securities Co. of Missouri
	Expan., additions	950,000	9½	Kucher Airplane Corp. (Del.)	M. Robins & Co., Inc.

APPENDIX II—(*Continued*)

DATE 1929	PURPOSE OF ISSUE	AMOUNT INVOLVED	PRICE PER SHARE	COMPANY	ORDERED BY
	Inv. purposes	230,000	2 sh A 1 sh B $23	Aircraft Shares, Inc.* (Baltimore)	Townsend, Scott & Son, Baltimore
September...	Devel. of operations	150,000	1½	Courier Monoplane, Inc.	Dowell & Hull, L. A., Cal.
	Devel. of operations	375,000	10	Hawaiian Airways Co., Ltd.	Aircraft Securities Co., Los Angeles
	Devel. of operations	187,500	12½	L. A. Metropolitan Airport	Brophy, Weirick & Co., Los Angeles
	Acq., devel., etc. Add. CAPITAL	750,000	1 sh A. 1 sh B $10	Schlee Brock Aircraft Corp.	Offered by Company
October.....	Add. cap.	1,000,000	10	Southern Air Transport	Offered by company to stockholders underwrit.
November...	Complete new plant; wkg. cap.	3,000,000	97	The Glenn L. Martin Co.	Otis & Co. Baltimore Trust Co.
	Acq. and devel. of prop.	3,250,000	5	New York City Airport, Inc.	Wm. Paul Buchler & Co.
December...	.....	.....	.....	None	.....
1930					
January.....	.....	.....	.....	None	.....
February....	Add. eqpt. facil., etc.	$312,500	12½	Alaska-Washington Consol. Airw.	A. F. Bernstein & Co., Seattle
March.....	Gen. corp. pur.	370,000	18½	Fairfax Airports, Inc.	A. A. Durante & Co., Inc.
April.....	.....	.....	.....	None	.....
May.....	.....	.....	.....	None	
June.....	Gen. corp. pur.	1,172,684	6½	Aviation Corp. (Del.)	Offered to stockholders of Fairchild Avia. Corp.
July.....	.....	.....	.....	None	.....
August.....	.....	.....	.....	None	.....
September...	.....	.....	.....	None	.....
October.....	.....	.....	.....	None	.....
November...	.....	.....	.....	None	.....
December...	.....	.....	.....	None	

* Aviation Investment Trusts specializing in aviation securities. These trusts are not included in the main statistical compila-ons of the study.

Source: Compiled from the *Financial and Commercial Chronicle.*

APPENDIX JJ

Mail Carried by Routes for 1930

Route	Scheduled	Actually Flown	Per Cent of Scheduled Mileage Flown	Total Weight of Mail Dispatched (Pounds)		Ave. Wgt. per Scheduled Trip	Amount Paid to Contractor	Average Compensation per Mile Flown		Contractor
				1930	1929			1930	1929	
Boston—New York...	197,013	178,540	90.6	120,582	116,095	215	$221,445	$1.24	$2.95	Colonial
Chicago—St. Louis...	413,920	373,847	90.4	61,370	78,077	42	208,220	0.56	0.62	Universal
Chicago—Dallas.....	1,496,989	1,358,777	90.7	436,046	391,407	299	1,198,699	0.91	1.01	National
Salt Lake—San Diego.	968,641	927,893	95.7	857,724	757,685	825	1,589,284	1.71	3.17	Western A. E.
Salt Lake—Seattle....	1,039,077	970,498	93.1	284,535	236,083	261	894,515	0.92	1.52	Varney
Seattle—San Diego...	836,102	811,119	96.9	288,447	253,437	395	715,544	0.88	0.95	Pacific Air T.
Chicago—St. Paul....	1,027,596	985,560	95.8	225,104	179,376	103	650,254	0.66	0.71	Northwest
Cleveland—Pittsburgh	207,939	190,917	91.8	65,067	97,027	45	172,138	0.90	2.07	Ball
Cheyenne—Pueblo...	151,338	141,704	93.6	89,399	98,828	122	81,105	0.57	0.54	Western Air E.
Cleveland—Louisville.	271,874	248,329	91.3	79,548	95,840	109	113,334	0.46	0.48	Universal

APPENDIX JJ

Mail Carried by Routes for 1930

Route	Scheduled	Actually Flown	Per Cent of Scheduled Mileage Flown	Total Weight of Mail Dispatched (Pounds) 1930	1929	Ave. Wgt. per Scheduled Trip	Amount Paid to Contractor	Average Compensation per Mile Flown 1930	1929	Contractor
New York—Chicago..	1,429,272	1,269,400	88.7	1,693,253	1,618,287	1084	1,278,358	1.09	1.14	National
Chicago—San Francisco.....	2,812,181	2,679,852	95.3	2,075,609	1,797,506	1501	3,786,108	1.40	1.41	Boeing
New York—Atlanta..	1,182,274	1,066,496	90.2	461,918	341,590	344	1,348,182	1.26	1.83	Pitcairn
Albany—Cleveland...	285,743	258,792	90.3	64,274	103,083	103	92,517	0.36	0.36	Colonial West
Dallas—Galveston....	234,834	220,676	93.9	36,410	45,394	50	107,002	0.49	0.57	Southern A. T.
Dallas—Brownsville..	388,334	374,392	96.4	88,259	83,671	121	256,142	0.68	0.66	Southern A. T.
Atlanta—New Orleans	353,142	339,834	96.2	109,906	86,610	151	197,772	0.58	0.47	Southern A. T.
Chicago—Cincinnati..	410,261	359,576	87.6	77,210	79,364	53	122,176	0.34	0.34	Embry-Riddle
Atlanta—Miami	560,351	528,343	94.8	188,202	121,333	258	276,603	0.52	0.39	Pitcairn
Great Falls—Salt Lake	497,580	487,901	98.1	63,503	69,373	87	223,598	0.46	0.42	National Park
Bay City—Chicago...	661,530	601,170	90.9	184,779	173,232	302	287,015	0.48	0.33	Thompson
St. Louis—Omaha....	592,164	566,460	95.7	181,671	65,279	125	142,550	0.25	0.21	Universal
New Orleans—Houston.....	233,429	232,522	99.6	52,461	42,146	72	52,449	0.23	0.21	Southern A. T.
Chicago—Atlanta....	688,016	624,872	90.8	123,968	98,067	170	125,794	0.20	0.15	Interstate
Pasco—Seattle (a)....	189,416	176,253	93.1	83,028	52,909	229	7,473	0.04	0.05	Varney
Atlanta—Los Angeles*	375,180	326,258	87.0	44,169	.....	282	293,213	0.90	....	S. A. F. E.
New York—Los Angeles*.....	456,299	361,293	79.1	48,761	.....	358	140,904	0.39	....	Trans. & West
TOTAL.....	17,960,495	16,661,274	92.6	8,085,203	7,100,027	....	$14,682,394	$0.88	$1.06	

*Established October, 1930. (a) Consolidated with C. A. M. 5, July 1, 1930.
Source: U. S. Post Office Department.

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